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PROFESSOR OF SURGERY IN THE UNIVERSITY OF LONDON AT THE BRITISH POSTGRADUATE MEDICAL SCHOOL, HAMMERSMITH

"If you have no confidence in success, you can have no hope of winning."—*Lord Lovat.*

IN the long history of this lectureship extending over a period of 52 years, no one appears to have thought it worth while to deal with the subject which I have chosen. Probably the reason is because malignant disease of the œsophagus has always been looked upon as so hopeless from every point of view. It is recorded of Dr. William Wood Bradshaw, the founder of the lectureship, that he was a quiet, home-loving, studious man, who diligently cultivated his mind both in literature and science. For many years he practised at Andover and Reading and was for a time vice-president of the Pathological Society in the latter town, so that he was probably very familiar with the sad clinical history of these cases and of the pathological processes which, if unchecked, gnaw steadily at the vitals until death comes to the rescue. The attention which is directed to this subject from time to time is probably the expression of a desire to remove a reproach and to conquer a hitherto unassailable peak. So far the rewards have been few and bestowed infrequently but :—

> "Delusion sweet thus tempts us on
> Till all the leaves are like to one
> Yet Hope looks back as heretofore
> And smiling seems to say encore."
>
> *J. M. W. Turner.*

The majority of physicians and very many surgeons seem to have already decided that, except for palliative measures, surgery cannot claim a place in the treatment of carcinoma of the œsophagus and the earnest student will get nothing but discouragement from text-books. Most authorities still seem to think that it is along other than surgical avenues that legitimate treatment must be directed. As a matter of fact although radium and deep X ray therapy both hold out great promise, no one can claim that at present either method can be expected to do more than palliate these cases, although there are odd instances in which a cure has possibly been attained. At the same time these are no more frequent than the occasional successes as the result of surgical intervention; so that it comes to this, that none of the workers in any field can afford to belittle the efforts of others or can legitimately crow over their own success. In each of the spheres of therapeutic endeavour great ingenuity has been displayed and an enormous effort expended. In this lecture I only propose to tell you something about my own personal experience. It would take far too long even briefly to review the vast amount of work that has been carried out on this subject and as that has been repeatedly done in the immediate past, I doubt if it would serve any useful purpose.

Some Pathological Considerations

"First things come first."

The prelude to successful treatment must always be an understanding of the pathological features and this is peculiarly so with a secluded structure like the œsophagus, inaccessible and difficult of observation. It has been persistently stated that carcinoma of this organ is of a particularly virulent type that disseminates wide and early, and this teaching has had a depressing effect on the outlook with which the condition has been viewed by the profession. It is only fair to say that those who have paid particular and critical attention to the subject, and especially with a view to the possibilities of direct interference, have from time to time pointed out the fallacy of this commonly accepted dictum. In what one is pleased to call the old days, there was much excuse for this unhappy view of the nature of these œsophageal growths because the observations made in the post-mortem room were nearly always on those subjects who had endured a lingering death from malignant disease of this part without any means having been taken to stay its progress. Anyone who examines the specimens of cancer of the œsophagus in our museums must be depressed by the shockingly advanced condition which they represent. What we really most want to know is the morbid anatomy at a stage at which the question of some form of active treatment arises. We also want exact knowledge of the mode of spread of malignant disease of the œsophagus and the various types which are undoubtedly present together with their most prominent features.

In ten cases in which I removed a portion of the œsophagus for carcinoma, the obvious growth varied in length from 1½ to 3 in. In three instances the tissues beyond the œsophageal wall were invaded and there were obviously infiltrated glands in close proximity. The smaller growths had the appearance of a constricting type as viewed from the outside. All had infiltrated the wall to some extent but none were of the massive or fungating type so commonly seen in museums, and in only one was there proved evidence of distant dissemination—that in the form of secondary deposits in the lung.

In this connexion it is illuminating to review the results of the after-death examinations of a series of patients which I have recently observed at the Hammersmith Hospital.

There were ten who died under observation without any treatment other than palliative gastrostomy. In three there were secondary deposits in the liver or spleen, the total duration of the illness being 14, 16, and 8 months respectively. In one of these cases the growth was situated in the lowest part of the œsophagus and had extensively invaded the cardia and might properly be considered an example of cancer of that part of the stomach which had invaded the œsophagus. In the other seven, the disease had only extended to the surrounding parts or had spread to the glands in the immediate vicinity but without any evidence of distant dissemination.

ROUTE AND RATE OF DISSEMINATION

These findings are entirely in keeping with what I have previously found from the observation of a number of such cases in Newcastle-upon-Tyne. But, of course, there are cases in which distant dissemination does occur and in what is apparently an early stage of the disease, that is to say, as judged from the onset of the symptoms. One may safely conclude that in the œsophagus as in other parts

* Bradshaw lecture delivered before the Royal College of Surgeons of England on Dec. 5th, 1935.

of the body, malignant disease varies in type and in behaviour. The growth may for long remain localised and comparatively slow in its spread, at other times it may involve a considerable part of the wall and rapidly invade surrounding structures, or it may early disseminate both by lymphatic channels and by the blood stream as shown by the occurrence of secondary deposits in distant parts. Very occasionally it may rapidly assume such widespread extension locally and generally as to bring it under the head of general carcinomatosis. In my Bigelow oration I expressed the opinion that probably half the cases remain local until the time of death; in the other half there is spreading to more distant parts. Increasing experience and more detailed attention to this matter lead me to believe that this proportion is probably too high and that one may expect at least two-thirds of the cases to belong to the more limited and locally spreading group. If we exclude from this computation those growths which arise from the so-called abdominal portion of the œsophagus, then the proportion of those that disseminate will be still further and notably reduced. Chevalier Jackson, after an experience of nearly half a century, states of cancer of the œsophagus, "It is not an aggressive type of malignancy; on the contrary, it is a mild, slow and for a long time purely local process." [1]

In previous writings I have given clinical illustrations of the general truth of these statements. There must be an early stage at which such growths are limited to a comparatively small area of the œsophageal wall and at which, if there is glandular involvement, it is in the immediate vicinity only. Such a statement suggests the value of the knowledge of the earliest stages of the commencement of the disease. What relation has its early features to the economy of the body and would it be possible at any stage to deal with the condition effectually by some endoscopic method? In order to obtain information on these points I have asked several of my friends who have the opportunity of examining large numbers of patients by the œsophagoscope. They all have to admit that the great majority are fully developed when they come under observation and that the possibility of local radical endoscopic treatment practically never occurs. But many workers are looking out for such opportunities and in the *Proceedings* of the Mayo Clinic for July, 1935, H. J. Moersch tells of a localised carcinoma which he was able to remove by endoscopic diathermy, the patient being alive and free from recurrence six months later. Unless it becomes the routine to examine systematically large numbers of patients endoscopically without waiting for symptoms, it is unlikely that growths in an early stage will be found. It is said (Chevalier Jackson) that normal swallowing can take place when the diameter of the œsophagus is only 5 mm. and that probably the peristaltic wave is not interfered with until the growth becomes annular. This knowledge emphasises the imperative necessity and importance of skilled examination by methods of precision the moment there is any complaint of alteration in the act or comfort of swallowing.

The problem, though so much more difficult, is very similar to the position with regard to the diagnosis of early malignant growths in the rectum. For long I had hoped that the almost routine use of the sigmoidoscope would lead to the discovery of many cases of rectal cancer in which it would be possible to contemplate an early local resection with conservation of the sphincter. Unfortunately this hope has not so far matured.

[1] Arch. of Surg., 1926, xii., 236.

Anatomical Considerations

The main facts of the anatomy of the œsophagus are well understood and for the most part adequately dealt with in the more ample books on anatomy. For those who contemplate direct surgical interference I would, however, suggest that the best way to study the relationships of the parts concerned is in transverse sections of the body. In order that the impression may be an accurate one, it is essential that such sections should be life-size, as it is so easy to be misled with regard to depth and distance by reduced pictures of this sort. For the purpose I can strongly recommend the "Atlas of Topographical Anatomy of the Head, Neck, and Trunk" produced by the late Prof. Johnson Symington of Belfast. The true œsophagus itself is really shorter than one imagines and a length of from 9–10 in. is usual. This is about the same as the length of the ureter in situ or the distance from the antecubital fossa to the front of the wrist. It is quite true that the tube may vary to some extent, depending for the most part on the size of the subject, and it may be elongated to a remarkable extent when obstruction is of long standing, but this does not appertain in cases of malignant disease. The normal distance from the teeth to the point where the œsophagus enters the stomach is 16 in. The levels of the various parts of the œsophagus are best stated in relation to the bodies or to the spines of the vertebræ. It is convenient to remember that its commencement is opposite the sixth cervical spine, its lower extremity opposite the ninth dorsal spine, and that the crossing of the left bronchus, which is just below the arch of the aorta, is opposite the fourth dorsal spine. It is important to realise that the œsophagus closely follows the conformity of the spine and when, as so frequently happens in the elderly, there is a considerable kyphosis, the upper part of the œsophagus passes almost directly backwards in the early part of its course. There is also some lateral deviation of the œsophagus so that in the upper part of the thorax it inclines more to the right, whereas in the lower part it definitely abuts to the left. For the exposure of its upper part the right side should therefore be selected while for the lower part the left is more convenient. This refers not only to the transpleural approach but to the approach from the posterior mediastinum. Many surgical writers do not appear to appreciate the fact that, though the whole muscle is extraordinarily *distensible*, it is not *extensible* to any extent and only a very small portion, amounting to not more than 4 cm. (a little less than 2 in.) can be excised if the ends are to be brought together without tension. It must also be realised that the tube is readily friable for the muscular wall tears easily, though the submucous coat is tougher. The mucous membrane is in excess and tends to bulge through any incision in the muscular wall. Possibly these conditions are exaggerated when there has been obstruction with consequent alteration in the œsophageal wall.

RELATION TO THE PLEURA

From a surgical point of view, perhaps the most important relation is that of the pleura. It is not sufficiently realised that this membrane is in contact with practically the whole length of the tube on both sides. On the right the contact is intimate

throughout; on the left there is a middle portion in which it is protected from the pleura by the prominence of the aorta, but on this side the lowest part of the sac goes definitely behind the œsophagus and is in jeopardy when this part is attacked surgically. Opposite the bodies of the eighth and ninth dorsal vertebræ the two pleuræ sometimes almost meet behind the œsophagus providing this part with a sort of mesentery. These relations have been very carefully verified by my friend, Mr. James Whillis, and the diagram which he has made for me is very accurate (Fig. 1). This relationship is of great importance, because when we attempt to separate the œsophagus from its bed the pleura is very readily torn, especially if adherent. In transverse sections the posterior pleural sulcus is very obvious and I have noticed that this part of the serous cavity is sometimes obliterated by adhesions. When this occurs it is a fortunate circumstance as it protects that part of the pleura which is in closest association with the œsophagus. I am contemplating the possibility of bringing about this obliteration by some previous preoperative interference, though it is admittedly difficult to ensure that any known method will safely produce pleural adhesions as desired.

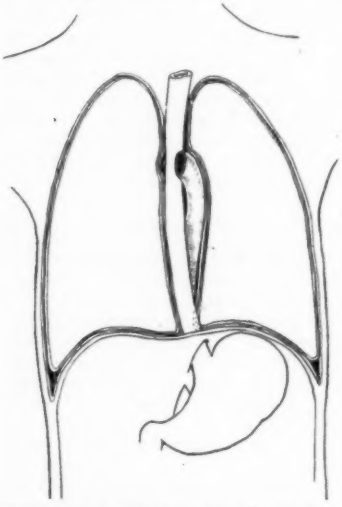

FIG. 1.—Anatomical considerations: showing the relation of the pleura to the œsophagus. (Dissection and drawing by Mr. James Whillis.)

THE "TUNNEL"

The next important point is to recognise that while for the most part the œsophagus lies more or less unattached in its bed of cellular tissue, there are certain definite points at which one must expect a certain amount of anatomical fixation. The first of these is the well-recognised broncho-œsophageal muscle attached to the back of the trachea just at its bifurcation or to the left bronchus. This may also connect to the back of the pericardium. The other and less well-recognised points of fixation are near the dome of the right pleura, the arch of the aorta, the subclavians, and the common carotid arteries. The adhesions to the blood-vessels usually contain branches of the vessels to which they connect. Dr. Vincent Pallares, who is now working with me at the postgraduate school, has verified these matters. Except at these points the œsophagus is not adherent to the very important structures which one finds as its fellows. The bed of cellular tissue in which the œsophagus lies is not so obvious in the developing fœtus, but it gradually becomes very well marked in adult life, although unfortunately it is difficult to demonstrate by any pictorial method. Nevertheless anybody who examines the œsophagus in situ must be struck by this very loose connexion and by the way it can be very readily separated from its surroundings. The presence of this cellular tissue practically amounts to a bursa surrounding the tube, providing the freedom which is so necessary for its unimpeded movement, not only in the act of swallowing, but during the movements of the body. The importance of this bursa is well illustrated by those occasional cases in which some part of the tube gets abnormally attached, in inflammatory conditions of the glands for instance, and in consequence a traction diverticulum develops. This œsophageal tunnel can be demonstrated in dissections of the fresh cadaver and its surgical importance is at once realised when it is entered from the diaphragmatic hiatus, for the finger can be readily swept round the œsophagus which at this site is extraordinarily easily separated from the bed in which it lies. I have attempted to demonstrate this bursa by distending the cellular tissue with fluid or with oxygen, and I am able to show an X ray in which the latter method was used in a young subject. When a hollow needle is thrust into the lower part of the tunnel and the oxygen turned on, the latter immediately passes up by the side of the œsophagus and reaches the cellular tissue in the root of the neck, and this happens on both sides of the tube, but it is difficult to distend the cellular tissue in front and behind. The arteries which supply the œsophagus next demand attention. The important point to realise is that there are no large branches that pass directly to the tube, so that there is fortunately for surgical purposes safety in numbers.

The arteries are all subsidiary branches springing from named vessels like the inferior thyroid, the bronchial arteries, the intercostals, and the aorta, and they pursue a course of some length before they reach the œsophagus itself. It is also of some moment that for the most part they pass in a downward direction before finally breaking up on the wall of the tube. The vessels supplying the lower end are in a different category. Here the main artery is undoubtedly the special branch from the left gastric, but there is another from the left inferior phrenic. As can be seen in any well-injected specimen, these numerous vessels eventually break up into a very fine plexus on the œsophageal wall.

BLOOD AND LYMPHATIC SUPPLY

In the early days of my surgical interference with the œsophagus, I came to the conclusion on clinical grounds that the blood-supply of that part, which is about one and a half inches above the diaphragm, was, to say the least, precarious. This and other matters have been verified by the Japanese worker Ohsawa, who has shown by a very interesting series of observations the exact area of the œsophagus which receives its supply from the various vessels. The diagram in his recent publication ("The Surgery of the Œsophagus") illustrates this state of affairs very clearly and defines the dangerous anæmic spot, which is of extreme importance in connexion with some of the operative procedures which have been suggested and carried out.

For surgical purposes then we may take it that the œsophagus from its commencement to just below the bifurcation of the trachea is adequately supplied with blood. Below this point the supply becomes less until at a spot about 1½ to 2 inches above the diaphragm it is very poor, in fact dangerously so, for any surgical interference. The last part of the œsophagus above the diaphragm and the intra-abdominal portion is well supplied from the left gastric and from the left

inferior phrenic. The arrangement of the veins is fortunate from the surgical point of view. When I first began to contemplate direct interference with the œsophagus I was very fearful of the hæmorrhage which I expected would come from the azygos veins, but, as a matter of fact, these great trunks do not receive blood directly from the œsophagus and the intermediary vessels only open into the azygos after considerable interval. There are also large branches, which open into the thyroid veins in the neck and, at the lower end, veins, which join the abdominal coronary system. Of course, there are many variations, and in pathological states the veins may be extremely congested as in œsophageal varix, but this condition is not likely to occur in carcinoma.

The relationship of the vagi is also a matter of importance and concern but, again fortunately for the surgeon, the main trunks are not closely adherent and can be separated without much trouble and, in point of fact, except when infiltrated by growth they seem to look after themselves in a wonderful way when the œsophagus is isolated for any surgical purpose.

The lymphatic arrangements seem to be well understood and in keeping with the usual description, but I would like to stress the fact that some of the lymphatics from the lowest part of the œsophagus drain into the glands along the lesser curvature of the stomach, although drainage in the opposite direction may also occur. There are several lymphatic glands lying directly on the œsophageal wall and lymphatic vessels also drain to the peribronchial lymphatics at the root of the lung. The upper part of the œsophagus drains mainly into the lower deep carotid glands. The supraclavicular lymphatic glands on both sides receive a supply from all parts of the œsophagus.

The development of the œsophagus has some bearing on our surgical outlook. For instance, it is well to realise that in the very active changes during the second month of fœtal life it is really pushed backwards into the cavity by the development of the lungs and pleuræ. When, therefore, the œsophagus is removed surgically by withdrawing it up into the neck after mobilisation, it is but retracing the steps which brought it into the secluded position which it normally enjoys.

RESISTANCE TO INFECTION

When anatomists speak of the abdominal portion of the œsophagus they are at considerable difficulty to define its exact demarcation; histology and pathology are probably more helpful than the ordinary landmarks for which they seek. The line of demarcation between the epithelium of the œsophagus and that of the stomach is not a very sharp one, and it is quite common to find a graduation between œsophagus and gastric mucous membrane when the matter is looked at histologically rather than by the naked eye. Pathologically growths in this lowest portion of the œsophagus resemble neoplasms of the stomach in their behaviour, for they not only involve the lymphatic glands in the lesser curvature, but they tend to disseminate, and secondary deposits in the liver are a marked feature. The resistance to organised invasion of the cellular tissue surrounding the œsophagus is a matter of supreme importance when surgical interference is contemplated. It has usually been looked upon as of low resisting power, and clinically it is well recognised that infection of this tissue, known as the clinical entity "acute mediastinitis," is extraordinarily rapid in its development, severe in its manifestations, and most lethal in its termination. This matter has concerned me very much indeed in connexion with the surgery of the œsophagus and, because of these known characteristics, I have always feared that acute infection of the cellular tissue would be almost a complete obstacle to surgical interference in this neighbourhood. This known tendency to infection is an excellent reason for so arranging technical procedures that no division of the œsophagus and no suturing, which might possibly be attended with leakage, is made in the midst of the tunnel. In the cases in which I have been able to excise the œsophagus and in which the patient has completely recovered or has lived for a considerable time, I have been struck with the almost entire absence of any evidence of acute infection, which I so much feared. It may be that by removing the œsophagus the cellular tissue is so freely opened up that drainage comes to our aid, but that cannot be the sole explanation because in my most successful case external drainage was not provided and yet the patient recovered so well that in three weeks he was able to leave the hospital apparently quite well.

Problems of Diagnosis

In adults a history of steadily increasing difficulty in swallowing without any previous causative factor, such as an injury from imbibing noxious fluids, is almost pathognomonic of œsophageal neoplasm. In the other causes of obstruction such as pouches or spasm the symptoms are for long intermittent and come on in definite attacks which pass off spontaneously. As a rule the onset of dysphagia due to malignant disease is gradual and takes the form of an increasing difficulty with solid foods. More rarely the onset may be sudden, and those patients are fortunate in whom the blocking of the neoplastic œsophagus by some hastily swallowed bolus of solid food early draws attention to unsuspected narrowing, if indeed this warning is promptly followed by the thorough investigation which it demands. This event is comparable to the patient with the large intestine growth, to which attention is first drawn by some solid body amongst the fæces. The average length of history is usually short and yet in the majority, in fact almost always, we find that the disease is well developed at the time that examination is first made. These considerations suggest that in most cases the disease is already well advanced before any symptoms arise. Chevalier Jackson, who has had the opportunity of observing many cases by repeated œsophagoscopy over long periods of time, has accumulated data from which he concludes that most growths have been present for many months before symptoms arise. He is of opinion that when the growth has reached the stage of complete obstruction the lesion has been present for at least a year and probably longer.[2] Often the discovery of a well-developed growth with a short history has been so surprising as to stimulate one to make a very searching inquiry as to earlier symptoms, but this very rarely discloses anything which might have led the patient even to suspect that there was something amiss. The plain duty of the profession is to realise that any interference with the act of swallowing in adults usually means that a new growth is present and that being so, as soon as a patient exhibits such symptoms a full investigation should be carried out, rather than those temporising measures which so often delay the

[2] Southern Surgeon, 1935, iv., 1.

arrival of the patient until the disease has still further advanced, often by months. In a series of my own cases the average time which elapsed between the onset of symptoms and the opportunity for dealing with the matter was no less than 15 weeks.

SIGNIFICANT SYMPTOMS

Once having been discovered, the symptoms do tally with pathology and the variation in the speed of the growth is sometimes very remarkable. Some clue as to the type may be suggested by the symptoms of the patients. Those who harbour rapidly growing neoplasms complain of weakness and loss of general health and appetite, rather than of the extreme local disability as disclosed by dysphagia. Long ago my old teacher, Prof. Rutherford Morison, used to point out that the lack of appetite often meant that there were already secondary deposits and that the patient was not likely to live long. There can be no doubt that the outlook in patients who complain only or mainly of mechanical difficulty is much more hopeful than where general weakness and impaired condition is out of proportion to the inability to take food. Anæmia and rapid loss of weight are ominous symptoms. Persistent cough, or cough made worse whenever the patient takes food, is also a very bad sign and often means that a communication between the respiratory passages is already established. But it is incorrect to assume that such a communication will immediately be followed by some type of septic pneumonia although that is so frequent a sequel. I have recently observed a patient on whom gastrostomy had been performed seven months previously for a malignant growth in the œsophagus. The condition was investigated by an opaque drink, and to our surprise we secured a beautiful bronchogram of the left lung. The presence of the opaque material in the bronchial tree did not appear to give rise to any disturbance whatever, and without any special treatment of any sort this man lived for a further period of eight weeks and then slowly died from a general process of inanition. At the same time, if there is any suggestion of such a communication it is most important that such interference as may be necessary should be conducted under local anæsthesia.

FIG. 2.—Large growth in lower œsophagus almost completely separated from its bed as a result of exploration from the abdominal hiatus.

Sometimes there is long-standing history of either persistent difficulty in swallowing or an exacerbation of a degree of difficulty which has existed for many years. I have come across this combination in two striking cases. While this sort of history is usually suggestive of some condition that is non-malignant, it must be borne in mind that some of these patients do ultimately develop malignant disease and I think that is especially so in women. The comparative frequency of an upper œsophageal spasm in the female sex has often been noted and has been followed by the development of malignant disease in quite a proportion of cases. Prof. Lambert Rogers, who has drawn attention to this association,[3] is inclined to think that the treatment he advocates may be in some degree prophylactic against the development of malignant disease.

When a patient is examined as soon as difficulty in swallowing declares itself, it is unlikely that there will be any physical signs that can be discovered by ordinary methods. We must urge the complete examination at this stage by the X ray and the œsophagoscope wherein seems to lie the only hope of discovering the growth at a stage at which treatment has a chance to be effective. But, at whatever stage the patient is seen, it is essential that an ordinary examination should be made in the first instance, if for no other purpose than to eliminate conditions suggestive of dissemination. Such an examination involves the palpation of such part of the œsophagus as can be reached in the root of the neck. Sometimes the growth can actually be felt; it may even then be stony-hard and fixed, or it may be moved from side to side and moves up and down on swallowing. Though the actual growth is rarely felt, there may be some enlargement of the glands which is suggestive, and in this disease the glands at the root of the neck are commonly affected on both sides. In the same way the lower end of the œsophagus is sometimes suspected to be the seat of a growth, when, as a matter of fact, the neoplasm is really in the cardiac end of the stomach. In these circumstances the growth may occasionally be felt in the latter situation and there is no excuse for not making such an examination as might detect it. For the same reason and in order to eliminate advanced cases examination of the liver and peritoneal cavity for secondary deposits is important.

USE OF X RAYS AND ŒSOPHAGOSCOPE

The detection of growths in the middle part of the tube by ordinary examination is wellnigh impossible, but it should never be omitted because sometimes the signs point to an extra-œsophageal growth, which will explain all the symptoms. The confirmation of the diagnosis in the absence of physical signs is of course most conveniently made by X ray examination, and this may tell us a great deal more than

[3] Brit. Jour. of Surg., 1935, xxii., 829.

merely the situation and the nature of the obstruction. In fact, if we are to contemplate direct interference, we must ask of it information, not only as to the nature and site, but with regard to the size, the shape, and especially the length of the growth, as well as the question of the condition of the œsophagus above it. It is also by this plan that I think we may get the most valuable help as to the question of fixation of the growth by local infiltration. This may be demonstrated by the absence of the swallowing movements conveyed to the growth and possibly by movement in response to change of position. It has been suggested that the relationship of the neighbouring organs, for instance the aorta and the heart, may similarly give such information.

After the X ray examination, the use of the œsophagoscope is by far the most important method. By its means the presence and nature of a suspected lesion can usually be determined and in doubtful cases a fragment may be removed for histological examination, while the presence of outlying nodules and multiple growths may also be established. I have been a little disappointed at the small amount of other information which this method furnishes; one cannot get much help with regard to the extension of the growth beyond the wall of the œsophagus. If there is any question of the involvement of the lung root, bronchoscopy should certainly be carried out and has occasionally given valuable information. The method of retrograde œsophagoscopy is now on trial and may have possibilities that make it worth while, in spite of the fact that it demands an abdominal operation in itself. Gross extension to other parts and the involvement of nerves, such as the recurrent laryngeal and sympathetic, are an evidence of the utter futility of any but the simplest palliative measures. As yet most patients suffering from œsophageal growths are in a state of serious subnutrition when they come under the notice of the surgeon, and gastrostomy or jejunostomy is imperative. In these circumstances I think it is much better to make the gastrostomy first and to carry out detailed investigation as soon as their condition will allow. Whenever the patient's condition permits the upper abdomen should be explored at the time that the gastrostomy is made. When the growth is at the lower end, any extension to the stomach can be noted and whether or not there are secondary deposits in the liver. The condition of the glands along the lesser curve of the stomach is most important, for when they are infiltrated in œsophageal cases it almost invariably means that the growth is entirely beyond the possibility of direct interference. But having discovered the presence of a growth and eliminated such ordinary signs of dissemination as can be made out on clinical examination, what more can we do in order to determine whether or not there are such hidden extensions of the neoplasm as to render an attempt at its removal inadvisable?

I would like to emphasise the importance of re-examining these patients after such relief as may have been provided by gastrostomy. An extension to the bronchus may be entirely unsuspected one day, while by the next perforation may have occurred and aspiration pneumonia be developing. General well-being as expressed by the patient, appetite and relish for food, and gain in weight are the best indications of improvement. Despite what has been said by the ardent endoscopists about the futility of surgical exploration there are ways in which useful information may be gained without unjustifiable risk.

THREE AVENUES OF EXPLORATION

Growths in the upper third may be explored by exposing the œsophagus in the root of the neck and sounding the œsophageal tunnel with the finger. If the growth is found to have infiltrated the peri-œsophageal tissues or neighbouring structures like the trachea or aortic arch the exploration may be abandoned without the patient coming to any harm. With growths in the lower third the same sort of exploration may be conducted from the abdomen. The left lobe of the liver should be mobilised and the tunnel sounded with the finger introduced through the diaphragmatic hiatus (Fig. 2). For growths in the intervening portion, the transpleural approach is both feasible and practicable and is not necessarily attended with any great risk.

By whatever route the exploration is conducted, it should be the rule that unless the œsophagus with the growth can be easily separated from its bed by the insinuating finger it is best not to attempt removal. I have conducted each of these methods of exploration without any harm coming to the patient. When it has been otherwise the fatality has nearly always resulted from opening up an infected focus outside the growth or actually tearing into the growth itself. In either case a rapid form of infective mediastinitis has carried off the patient. Whenever the surgeon makes such an exploration, he ought to be prepared to carry straight on with the operation of excision if found to be feasible. In some cases a growth of the lower œsophagus has been explored by sounding the tunnel at the time of making the gastrostomy. Having found the conditions favourable for an attempt at removal, I have returned to the problem in three or four weeks' time when the patient's general condition had sufficiently improved to warrant the attempt at excision. To my dismay the growth was by then densely fixed and irremovable, presumably a consequence of the previous traumatism which the exploration had inflicted. So that I am prepared to advise that if the patient is well enough when the gastrostomy is required, the condition of the liver and the glands along the lesser curvature may be investigated, but that any further exploration should be deferred until the patient has obtained the optimum improvement from preliminary measures and the surgeon is prepared directly to follow up exploration by excision should it appear feasible. For my own part I am not depressed by the 12 cases in which exploration has shown that the disease was too far advanced, but am greatly impressed by the fact that in no less than 19 cases it was possible to remove the growth, and in 13 with great promise of success, if technical preparation and achievement had been equal to the opportunity.

(To be concluded)

BRISTOL ROYAL INFIRMARY.—The number of patients received during the year at this hospital again reached a record, the casualty department dealing with 42,000 cases (115 a day). The annual expenditure exceeds the annual income by £30 a day.

HOME FOR RHEUMATIC CHILDREN AT SMETHWICK.—Dr. Clyde McKenzie, chairman of the health committee, announced at a meeting of the Smethwick town council on Jan. 1st that the Ministry of Health had approved the scheme for the provision of a home for rheumatic and marasmic children. The building will accommodate some 30 children, and will adjoin the Firs Open-Air School, which those children will be able to attend.

INTERMITTENT CLAUDICATION AND ITS QUANTITATIVE MEASUREMENT

By H. T. Simmons, Ch.M. Manch., F.R.C.S. Eng.

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Intermittent attacks of limping in horses have been recognised by veterinary surgeons for well over a century and in 1831 Boullay [1] demonstrated that they were associated with an ischæmic condition of the hind limbs. In 1858 Charcot [2] described a similar condition occurring in a man and introduced the name intermittent claudication. His patient had a traumatic aneurysm of the proximal part of the right common iliac artery, with obliteration of the lumen of the distal portion, and Charcot pointed out the similarities between the intermittent limping of this man and that observed in horses. Erb,[3] and the German writers immediately following him, gave excellent descriptions of the claudication and associated symptoms, but wrote as though it constituted a morbid entity, inventing at the same time a number of different descriptive names which only served to confuse the issue. Buerger [4] vigorously attacked the suggestion that this condition constitutes a disease; he pointed out that intermittent claudication is a very striking symptom of muscular ischæmia due to varying pathological conditions.

A small proportion of cases of intermittent claudication are due to pure spasm of the arteries in neuropathic individuals and no structural disease of the vessels is demonstrable either at the time or in later years. Apart from this relatively rare "functional vasomotor" type, the presence of this symptom is evidence of organic vascular disease which has produced some degree of occlusion in the vessel. Arterio-sclerosis, thrombo-angiitis obliterans, and syphilitic endarteritis are the usual causes of the vascular disease. The symptom of intermittent claudication is, however, most often present and best studied in thrombo-angiitis obliterans.

The patient complains that shortly after beginning to walk he notices paræsthesiæ, tension, and weakness in the calf muscles which become painful. These symptoms steadily increase in severity so that walking is embarrassed and finally becomes impossible. The symptoms fade after a rest of a few minutes and a further period of walking is then possible.

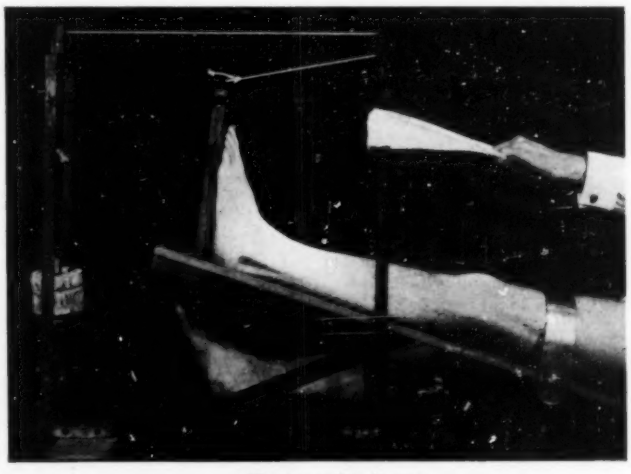
The pain is cramplike and arresting, usually in the calf, but sometimes in the sole of the foot. A few patients have likened it to "a clod of clay under the foot," and others to a "tight string tied round the calf, just below the knee." The trouble begins earlier if the patient walks rapidly, or uphill, an observation which he quickly makes and allows for in his walking. The muscles of the thigh and buttock may be affected, indicating involvement of the iliac vessels and a graver prognosis.

This typical sequence of embarrassment of muscular action after a short period of work, followed by recovery on resting, occurs in other muscle groups, and the term intermittent claudication is applied to the syndrome when observed in any part of the body, though it is usually restricted to its occurrence in the lower limbs. The arms are occasionally affected in arterio-sclerosis, and in thrombo-angiitis the presence of claudication in the arms is of grave omen because the legs will be found to be extensively involved, if, indeed, they have not already been amputated. Determan [5] reported the case of a young Russian whose tongue was affected so that after 5–8 minutes, speech became impossible and the motility returned only after a period of rest.

Charcot believed that the pain was due to the ischæmia and resulting anoxia of the muscles and nerves of the limb, but Lewis [6] with his recent experiments suggests that the muscles elaborate a pain-producing factor (P). This passes out into the tissue spaces and is normally removed by the blood stream. The development of pain is dependent on the accumulation of a certain concentration of this substance in the tissue spaces, and so long as the circulation is adequate pain is avoided. Should the circulation be inadequate, pain is produced when the requisite concentration of P is attained, and disappears only after a period of rest long enough to enable the blood stream to wash away the P factor and lower its concentration below the pain threshold.

A METHOD OF ESTIMATING CIRCULATORY EFFICIENCY IN THE LEGS

The condition is always bilateral in thrombo-angiitis obliterans, but the leg more severely affected always halts the patient, so that he is not aware of the condition of the other leg. It is a peculiar and constant observation that when the second leg does give symptoms, the arterial occlusion progresses much more rapidly than on the side first affected. It is important, therefore, to estimate the condition of the circulation in both legs, and especially when considering sympathectomy operations for thrombo-angiitis obliterans. The chief anxiety of the surgeon who is called upon to advise for or against sympathectomy in a case of thrombo-angiitis obliterans, lies in the difficulty he has in estimating just how far the circulation of the limb is depreciated.



The apparatus in use.

The rate of appearance of rubor in the dependent and of blanching in the elevated position will afford some guide; the more rapidly these things happen, the worse is the circulation. Such a guide is, however, at best a rough one. The effect of a spinal anæsthetic in raising the surface temperature of the limb is apt to be misleading since a rise of skin temperature bears no necessary relation to the amount of blood which may be entering the muscle bellies. The patient's own account of his symptoms is of small value, vitiated as it is by differences of level and of speed. Prof. E. D. Telford suggested that some simple form of ergometer might supply the information required and in a numerical form. Accordingly the apparatus here illustrated has been erected and used in several cases. It consists of a simple ergometer made out of a single inclined plane foot-splint with a hinged foot-piece.

In our experiments we have used a weight of 5 lb. and governed the rate of the exercise by a metronome working at 60 beats per minute. The foot is fully elevated at one beat and depressed at the next so that the weight is raised 30 times per minute. Difficulty in counting the beats is avoided by timing, and half the time, expressed in seconds, gives the number of elevations of the weight. This is the figure that we have used to express the results. We incline the leg piece at an angle of 20° with the idea of ensuring an adequate venous return so that our estimation is directly concerned with arterial flow. It is necessary to prevent the patient raising the thigh from the splint. Flexion at the knee and the use of the thigh muscles must not be allowed. This is secured by the use of an adjustable arch of Duralumin, so arranged that no constriction falls on the thigh. It is also advantageous to give the patient a loop of bandage to hold on to the apparatus so that he keeps his foot squarely planted against the foot-piece. Reviewing the results we find that a normal man can elevate the weight easily 150 times without discomfort. He then notices a dull ache about the instep and calf which does not progress in severity and which does not prevent him from carrying on for 250 times, or more.

THE TEST IN ACTION

The cases of intermittent claudication studied have been due to thrombo-angiitis obliterans and here the result is quite different. In some cases, shortly after commencing the exercise, a sudden pallor of the foot has been noticed, followed by pain in the instep and lower third of the calf. A rapid increase in the severity of the pain occurs with short, rapid, irregular excursions of the foot, until the movement ceases, the patient stating that the pain prevents continuation of the exercise. The pain is exactly similar to that which he experiences on walking. We have always tested the more affected limb first, unless there has been any contra-indication such as gangrene, or ulceration extending on to the plantar surface. The patient has been surprised to find that testing of his supposedly good leg has produced very little better results than those shown on the side of which he was complaining. A typical case is as follows:—

A blacksmith's striker, 45 years of age, well built and six feet in height, developed phlebitis in the superficial veins of the calf of his left leg during August, 1934. He was confined to bed for a month and, during his convalescence, noticed that cramplike pains appeared in the calf of his left leg if he walked some fifty yards. After a rest of 5–10 minutes he could resume walking, only to be stopped again by the cramp, after continuing a further fifty yards. For about a year before the attack of phlebitis he had noticed a similar pain in the left leg, but only following a long walk, or towards the end of a busy day. The right leg never troubled him and he had no rest pain.

He came for examination in January, 1935, and then could only walk about ten yards before the pain appeared in the left calf. Both feet showed a moderate degree of rubor, particularly the left. Raising the legs to 45° caused blanching of both feet in thirty seconds and again the blanching was more severe in the left foot. No pulses were palpable in either leg, but the thighs showed weak popliteal and superficial femoral pulses on either side. On both sides there was present a good, strong common femoral pulse. The blood pressure was 124/85, the Wassermann reaction was negative, and general examination revealed no other abnormality. The result of the claudication test was as follows:—

	Plantar flexions.	Remarks.
Left leg ..	25 ..	Pain commencing.
	37 ..	Unable to continue.
Right leg ..	57 ..	Pain commencing.
	75 ..	Unable to continue.

This case may be taken as one of typical thrombo-angiitis obliterans of moderate severity, likely to give a satisfactory result after lumbar cord ganglionectomy. This satisfactory result was indeed obtained as is shown by the readings given by the claudicometer ten months after operation.

	Plantar flexions.	Remarks.
Leg leg ..	130 ..	Pain commencing.
	150 ..	Continuing, but some difficulty.
Right leg ..	150 ..	No discomfort of any kind.

The method appears capable of expressing as a definite figure what one may call the circulatory value of a limb, and particularly is it valuable in assessing the condition of the leg less affected and of which the patient is not complaining. It is likely, as cases accumulate, that this simple method will afford a means of recording results much more accurately than is now done. It is obvious that terms such as "good," "fair," "improved" depend too much on the personal equation of both patient and surgeon to be of much value as clinical records.

SUMMARY

The symptoms of intermittent claudication are briefly reviewed and a simple ergometric method is described by which the severity of this symptom, and its progress after sympathectomy, can be conveniently estimated.

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TRAINING WOMEN FOR CITIZENSHIP OVERSEAS.—Last year the Royal Empire Society held its first experimental course for the training of women in citizenship overseas. The imperial studies committee of the Society and the Empire Citizenship Training Council have now joined to put the scheme on a permanent footing and the next course will begin on May 1st. It will comprise a description of the history, constitution, and races of the Empire, and lectures on household management and social services, and how these may be adapted to conditions overseas. Further information may be had from the secretary at 17, Carlton House Terrace, London, S.W.1.

LUMBOSACRAL STRAIN

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Few nowadays deny the possibility of such an entity as lumbosacral strain. The pendulum indeed has swung too far in the opposite direction, and the condition is diagnosed too often. Only a greater knowledge of its ætiology and clinical features will enable us to give strain its true significance.

THE CAUSES OF STRAIN

To understand how lumbosacral strain is produced, a knowledge of the anatomy and mechanics of the lower spine is essential. As these have already been described in several papers,[20 21 26 27 46 55 68] this aspect of the problem will not be considered here.

Acute lumbosacral strain may be caused by a sudden blow forcing the junction into positions beyond the normal limits of its mobility, by an effort to prevent some heavy article from falling, or by a sudden movement of the body in attempting to regain lost balance; the spinal muscles are caught off their guard and the ligaments sustain the full force of the injury. The ligaments and the surrounding muscles are stretched or torn, the synovial membrane and articular cartilages of the lumbosacral interarticular joints are bruised, and the corresponding intervertebral disc suffers. One or other of these structures may be predominantly affected, and all gradations of severity are encountered. Acute strains may also be caused by lifting a heavy weight with the body in a slightly bent position, the stoop accentuating the sacral obliquity and increasing the shearing stress at the lumbosacral junction. Another cause is the failure to provide support for the lumbar spine during an operation under a general or spinal anæsthetic or during a debilitating illness, when muscle relaxation and weakness throw additional strain on the ligaments.

After a heavy fall on the buttocks or feet, complaint is often made of low back pain which is sometimes due to lumbosacral strain, although this diagnosis cannot be confirmed until enough time has elapsed to exclude a possible vertebral crush-fracture. The momentum of the falling body, when suddenly arrested, produces a strong downward thrust at the lumbosacral junction, and the patient will be fortunate if he sustains no more serious injury than a strain. Sometimes the lumbosacral angulation is found to be increased after such falls, and nerve features suggestive of irritation or injury may be discovered. It has been suggested that the increased prominence of the junction causes tension on the fourth or fifth lumbar nerves as they pass downwards in the lumbosacral cord to join the sacral plexus, but it is more probable that they are involved in peri-articular exudate.

Diseases or deformities of the lower extremities interfere with the gait, posture, and body balance, and occasionally give rise to lumbosacral or intervertebral strains. Employment necessitating a continual stooping or semi-stooping posture increases lumbosacral shearing stresses and throws great strain on the back muscles, which become fatigued and leave the ligaments to bear most of the load. Working with one foot higher than the other for a long time is said to be the chief ætiological factor in many cases of strain in surgeons and dentists, but this danger may be averted if the foot is kept in the elevated position only for short periods, or if the feet are elevated alternately. It is doubtful if the wearing of high-heeled shoes is a common cause of low back strain. The tilt produced is mainly compensated for by extension at the ankle-joints and to a lesser degree at the hips, and there is little evidence that a lumbar lordosis of sufficient degree to cause ligamentous strain is produced; the mechanism of the foot is more liable to suffer than the lower spine. Postural and static derangements produce their evil effects by necessitating the prolonged use of the various spinal articulations in abnormal positions, and, just as an unevenly fitted hinge suffers from excessive friction, so do joints suffer from repeated minor injuries caused by working in unusual or extreme positions.

An increase in the weight of the abdominal contents interferes with the body balance, and throws increased strain on the lower spine, the additional weight pulling the trunk downwards and forwards and displacing the centre of gravity anteriorly. To bring the centre of gravity back to a more normal position, the lumbar spine assumes varying degrees of lordosis, while the back muscles contract more powerfully to sustain the additional weight and to maintain the lumbar lordosis necessary for equilibrium. When the body is erect, these muscles are in a state of postural tonus. Normally this can be maintained almost indefinitely and without voluntary effort, for the muscle-fibres act in relays, and when one set is in action the others are quiescent or recovering. A great increase in the load borne by the back muscles upsets the posturing mechanism by throwing an abnormal strain on the muscles, and the lumbar lordosis present in such cases shortens the muscle-fibres so that their power of contraction is decreased according to the well-known physiological law. Neurasthenia, excessive mental work, and worry have also been blamed for upsetting the delicate proprioceptive reflexes which govern the maintenance of posture. In whatever manner the mechanism is upset, the end-result is the same—a certain amount of voluntary muscular effort becomes necessary, and this, in contradistinction to postural contraction, rapidly leads to muscle exhaustion and relaxation so that the ligaments have to bear more strain than usual. Should the muscles be weak or atonic for any reason, fatigue and strain are even more readily induced.

Goldthwait,[26 27] who did much pioneer work on the genesis of back strains, distinguished two types of persons who are particularly liable to suffer from low backache.

(1) The visceroptotic, with poor muscular development, a long narrow back, a flexible spine often showing lumbar lordosis, and a sharp lumbosacral angle. This type seems to be specially subject to sacro-iliac strain.

(2) The exact opposite—a heavy individual, with a short thick-set body, limited mobility of the lumbar spine, and a varying degree of lumbar lordosis.

In this second type lateral bending in particular is limited, but all spinal movements are restricted. The vertebral bodies and articular processes are large, the latter having crescentic facets, whereas in the first type the vertebral bodies and articular processes are smaller and the articular facets are flattened. These bony differences explain the variations in the spinal mobility in the two types. Goldthwait's second type is supposed to be specially liable to lumbosacral strain.

SYMPTOMS

The chief symptom in lumbosacral strain is low back pain and the onset may be sudden and acute or chronic and insidious. In acute strains the patient

often volunteers the information that, while he was lifting a heavy weight or making a sudden movement, he felt something snap and immediately experienced pain in the lower back. The pain may be intense and localised at first, but later it becomes less severe and persists in a milder form for a variable period. Movement of the back increases the pain. Deep breathing and expulsive efforts produce the same effect, and Heald [39] suggests that this is due to tearing of the quadratus lumborum and its anterior fascial covering near their attachment to the iliolumbar ligament as a result of a sudden contraction in an asymmetrical position. This may occur alone, or in association with lumbosacral articular injury, and is likely to be unilateral. The pain is explained by the fact that the quadratus lumborum muscles contract during expulsive efforts in order to steady the lower ribs, and the diaphragm arises partly from the external arcuate ligaments, which are thickened parts of the anterior fascial coverings of the quadratus lumborum muscles.

Sometimes the pain is completely confined to one side, and radiates along the branches of the great sciatic nerve. The lumbosacral articular structures are supplied by the fourth and fifth lumbar nerves, and the anterior and posterior divisions of the fifth lumbar nerves are in close anatomical relationship to the articulations. Therefore pain may be either of the referred variety due to irritation of the articular nerve-endings, or may be caused by direct compression of the fifth lumbar nerve by periarticular œdema or hæmorrhage; at a later date the same effect may be produced by adhesions, ecchondroses, or osteophytes. The distribution of the pain corresponds with the cutaneous areas supplied by the fourth and fifth lumbar nerves, the fifth nerve areas being more often involved than the fourth. (See Figure.)

The commonest sites of referred pain and of hyperæsthesia in lumbosacral strain.

Effective treatment quickly relieves the pain but, if it is inadequate, the condition passes into a subacute or chronic stage with intractable backache which is aggravated by hard work, trauma, or climatic changes. In chronic cases the pain is more diffuse than in acute cases, and all have varying degrees of disability. Patients with increase or decrease in the normal lumbar curvature often have severe pain in the early stages of their deformity when the ligaments are stretching, but as the deformity becomes more pronounced the pain becomes progressively less, till in advanced cases it may be absent. The patient then describes his condition as a weak back because, although the pain goes, a feeling of weakness persists. Others lose all their symptoms and imagine they are cured. This type of case has been compared to the early and late stages of flat-feet. In the early stages pain is often severe, but as the ligaments stretch further the pain gradually decreases, till in the late stage with complete flattening it may be entirely absent.

The symptoms may be out of all proportion to the injury sustained, especially in middle-aged and elderly persons who already have a pathological condition, such as osteo-arthritis, affecting the lower spine. Until the time of the injury the disease may have been entirely latent, and there may be difficulty in deciding whether the symptoms and signs are due to the osteo-arthritis, or whether the clinical features are due to the combined effects of strain and osteo-arthritis. In many cases, even with the most complete examination, no definite decision can be given. In younger persons a congenital abnormality may account for disproportionately severe symptoms, while in others a functional element may be present. In a few malingering may be suspected, but the consensus of expert opinion appears to be that this is comparatively rare.

SIGNS

The patient may conform to one or other of Goldthwait's types. A pendulous abdomen is a common finding, and distension due to cyesis, cysts, or tumours may be discovered. Owing to the depth of the lesions, swelling and discoloration in the lumbosacral region are rare even in acute cases. Deformities of the lower limbs or spine and faulty posture should be noted. The spine may show a lumbar lordosis, and, in cases with unilateral pain, there is often a slight scoliosis to the unaffected side which relieves pressure on the injured joints and widens the intervertebral canals on the affected side, thus diminishing the possibility of pressure on nerves.

Palpation of the lower spine yields valuable information in all cases. Pressure over the spinous processes of the last lumbar or first sacral vertebræ, or in the space between may elicit tenderness, but more commonly deep pressure over the regions of the last lumbar transverse processes is necessary before pain is produced. The tenderness is usually greater on one side and occasionally is completely unilateral. In thin persons, deep abdominal palpation may elicit tenderness over the anterior aspect of the lumbosacral junction. A functional element or malingering should be suspected if the patient is inaccurate in the location of points of tenderness, and if he contradicts himself during the same or subsequent examinations. If one is in doubt, the following manœuvre is often valuable. The hand is placed on the tender region and the patient is asked to lean backwards. As he does so, the hand exerts increasing pressure and in a genuine case the patient soon recognises this, but a malingerer may be so concerned in retaining his balance that he fails to realise that he is now withstanding considerable pressure on a region which a short time before was sensitive to the slightest touch. This test loses much of its value if a neurasthenic element is present, for in traumatic spinal neurasthenia a paradoxical response to light and deep pressure is well known.

In chronic cases pressure over the various points mentioned may cause discomfort rather than actual pain, and this discomfort is usually greater if the pressure is applied when the patient is stooping. Spasm and tenderness of the lower back muscles are common in acute cases. The former is of a reflex protective nature, while the latter is due partly to muscular hyperalgesia and partly to tearing of muscle and aponeurotic fibres.

Neurological examination may reveal tenderness over the course of the great sciatic nerve, and hyperæsthesia along the antero- and posterolateral

aspects of the leg or ankle, or about the sole of the foot. If it is bilateral, one leg is commonly more affected than the other. Muscle wasting, hypertonicity, or atonicity are slight or absent, and the tendon reflexes are normal; if they are abnormal, it is probable that lumbosacral strain is not the only lesion present. I cannot agree with those writers who claim that the first sacral nerves supply branches to the lumbosacral articulations, and who therefore assume that changes in the tendo-Achillis reflexes, and referred pains in the area of cutaneous distribution of one or both first sacral nerves, are possibilities in uncomplicated lumbosacral strain. Attention might be drawn to another common mistake, that the posterior divisions of the fifth lumbar nerves supply the skin over the lumbosacral region posteriorly, so that referred pain and hyperæsthesia are present in this area in cases of lumbosacral strain. The posterior divisions of the last two lumbar nerves end in the muscles and never reach the skin, and it is muscular hyperalgesia and not cutaneous hyperæsthesia which is present.

An investigation of the lower spinal movements reveals interesting changes, though it is necessary to recollect that the degree of spinal mobility varies greatly even in normal individuals. In acute cases muscle spasm interferes with both flexion and extension, whether the patient is standing, sitting, or lying, and whether the movements are actively or passively produced. Likewise lateral bending of the lower spine is impaired, but it is often freer towards one side than the other. In these cases the symptoms and signs are mainly or completely unilateral, and the freer movement occurs away from the affected side. If the patient is asked to bend in various directions, he usually holds his lower spine immobile and assumes the desired position by movements at other joints. Heald [29] states that when one quadratus lumborum muscle is torn the patient, when lying supine, cannot raise both legs simultaneously if the feet are placed six inches apart.

Rectal examination is negative in uncomplicated cases of lumbosacral strain, unless the sacral promontory can be reached, when slight pain may be produced.

RADIOGRAPHIC APPEARANCES

In acute uncomplicated lumbosacral strain radiography shows nothing abnormal, but in chronic cases partial ossification of one or both iliolumbar ligaments is occasionally seen and osteo-arthritic changes are not uncommon. Lateral views show the type of lumbar curve, and, if there is much lordosis, the spinous processes may be seen impinging on each other. Congenital anomalies about the sacrovertebral junction should be looked for and the size of the lumbosacral angle estimated. Since the arrangement of the lumbosacral articular processes is very important, Berry [6] has devised a special radiological technique to determine the angles at which these processes are set so that any asymmetry can be detected.

DIFFERENTIAL DIAGNOSIS

Fractures or dislocations in the lumbosacral region must be excluded, and, as radiographic evidence of a vertebral compression fracture is often delayed, several examinations may be necessary before a positive opinion can be given. Good lateral radiograms are essential to differentiate between lumbosacral strain and early cases of spondylolisthesis.[43 45] In a case of suspected strain X rays may reveal other pathological changes, such as osteo-arthritis, tuberculosis, primary or secondary neoplasms, or gonococcal spondylitis, the symptoms being due to a flare up of the previously quiescent disease. Rarer conditions, such as acute osteomyelitis, "typhoid spine," gummatous osteitis, osteomalacia, osteitis fibrosa, osteitis deformans, and tumours of the cauda equina and meninges are less likely to cause difficulties in differential diagnosis. Low back pain is occasionally the earliest symptom in disseminated sclerosis and tabes dorsalis, and the referred pain in the legs and feet in cases of strain may be mistaken for sciatica, while the hyperalgesia of the lower spinal muscles may be suggestive of fibromyositis, the true underlying lesion being missed. Sometimes lumbosacral strain may simulate diseases of the kidney, appendix, uterus, or other viscera.

Congenital anomalies such as spina bifida occulta, interarticular neural arch defects, sacralisation or lumbarisation, may predispose to strain or cause similar symptoms. Incomplete sacralisation or lumbarisation gives rise to most difficulty in diagnosis and unilateral symptoms and signs in such a case suggest that the congenital abnormality may be the cause of the trouble. Spina bifida occulta may cause characteristic nerve features, but local signs are slight and spinal mobility is scarcely affected. Interarticular arch defects of the fifth lumbar vertebra undoubtedly predispose to strain, and it is impossible to separate the symptoms of the former from the latter.

Finally there is the problem of differentiating lumbosacral from sacro-iliac strain. In a certain proportion of cases, variously estimated at from 8–33 per cent., a condition of combined pelvic joint strain exists. In the others the history, physical examination, and radiographic findings must be considered in every detail, as the diagnosis can be made only by piecing together scraps of evidence which by themselves would be inconclusive, but which, when taken together, make a complete case incriminating one or other joint.

Exact information should be obtained regarding the onset of symptoms. The occurrence of a snap or "giving-way" sensation is important, and one should discover the exact site of the initial pain and whether it radiated. The attitude of the patient at the onset, and the position of maximum comfort should be ascertained; a patient with sacro-iliac strain is usually most comfortable when lying in bed on his unaffected side; a patient with lumbosacral strain when lying on his back with a support under the lumbar spine. Valuable information is obtained by watching the patient walking, standing, or attempting to climb stairs. The short deliberate steps to avoid any jolt or jar, the tendency to climb stairs like a man with an artificial limb, and the habit of standing with one leg bearing most of the weight and with the other leg slightly flexed at the knee are very characteristic of a sacro-iliac condition, but do not absolutely rule out lumbosacral disease. Great stress cannot be laid on alterations in the spinal curvature, but a lordosis is more common in lumbosacral and a scoliosis in sacro-iliac conditions.

Pain and tenderness confined to the lumbosacral or sacro-iliac regions are of the utmost significance, but the proximity of the two areas, and inaccurate localisation on the part of the patient, may cause errors in diagnosis. Radiating pains or paræsthesia are commoner and more extensive in sacro-iliac cases and are felt along the posterior aspects of the thigh and leg, the outer side of the leg, ankle, and foot,

and the posterior third of the sole of the foot. In lumbosacral derangements posterior thigh pains seldom occur, but the distribution of the leg pains closely resembles that found in sacro-iliac cases. Referred pains confined to the outer border of the foot and the heel are more often secondary to sacro-iliac conditions, but, if they are confined to the toes, anterior part of the sole, and inner half of the foot, they are more often due to lumbosacral disease. Posterior thigh pain, if present alone, usually indicates a sacro-iliac condition, while pain referred entirely below the knee suggests lumbosacral strain. Other causes of radiating pain must be excluded. Wasting of the gluteal, hamstring, or calf muscles, or interference with the tendo-Achillis reflex, are rare in lumbosacral but common in sacro-iliac disease, and in the latter Gratz's bimanual method of examination [28] may elicit tenderness about one or other sacro-iliac joint. X rays are not of much diagnostic value in acute cases, but in chronic cases they may show partial ossification of the iliolumbar ligaments or arthritic changes affecting either the sacro-iliac or lumbosacral regions.

Forcible lateral pressure over the iliac crests causes pain in all cases of acute sacro-iliac strain and in many chronic cases, but seldom produces pain in lumbosacral strain. Pressure backwards over the symphysis pubis usually aggravates the pain in sacro-iliac but not in lumbosacral strains. Forced flexion, abduction, and external rotation at one hip-joint separate the innominate bones, cause movement at the sacro-iliac joints, and produce pain in cases of sacro-iliac strain (Smith-Petersen's [63] "cross-leg" test.) Hyperextension at the hip-joint rotates the innominate bone on the same side and accentuates the pain of sacro-iliac strain.

In Gaenslen's [23] test, the patient lies supine near one edge of a bed or couch. The leg further away from the edge is acutely flexed at the knee and hip till the thigh touches the abdomen, and the patient then holds the limb firmly in this position with both his arms, thus immobilising the lower spine. The other leg is allowed to hang down over the edge of the bed and it is pressed down till the tension on the ilio-femoral ligament and the muscles attached to the anterior superior and inferior iliac spines causes the innominate bone to rotate on the sacrum. In sacro-iliac strain both local and referred pains are produced, and, by performing the test on both sides, it is possible to tell which joint is affected.

It has been claimed for all these tests that they will differentiate between lumbosacral and sacro-iliac conditions, but this is doubtful. The movements of the innominate bones may irritate a strained iliolumbar ligament or a torn quadratus lumborum muscle, which are occasional complications of lumbosacral strain, and low back pain may be produced in this way. Moreover, in Gaenslen's test, the acute leg flexion straightens out the lumbar spine, and this in itself may cause pain in a case of lumbosacral strain. Thus none of these tests is absolutely diagnostic, though the evidence they supply is very valuable when studied in conjunction with other findings.

The "straight-leg-raising" test is performed with the patient supine.

One hand is placed under the lumbar spine, and with the other hand first one leg and then the other is raised, keeping the knee extended; the hamstrings tighten and exert an ever-increasing pull on the tuber ischii, first causing rotation of the innominate bone on the same side, then tilting the whole pelvis backwards, and finally straightening out the lumbar curve.

Movement is first produced at the sacro-iliac joint on the same side, soon followed by movement on the opposite side, and finally by movements at the lumbosacral and lumbar joints. Thus in unilateral sacro-iliac strain, the leg on the same side cannot be raised as high as the leg on the opposite side before pain is produced; while, if lumbosacral strain is present alone both legs can be raised higher, because pain is absent until movements occur at the lumbosacral junction. The commencement of movement in the lower spine can be felt by the hand placed under it, and it is easy to tell if pain occurs before or after spinal movements begin. If pain is caused before spinal movements begin it suggests involvement of the sacro-iliac and not the lumbosacral region, although even at this stage movement of the innominate bones might irritate a damaged iliolumbar ligament or quadratus lumborum muscle. Pain coming on after the lumbar spine begins to move is more likely to be due to lumbosacral strain. The exact site of the pain affords valuable additional help in locating the affected joint.

Active and passive spinal and hip movements are examined when the patient is standing, sitting, and lying, and they may be altered in such a characteristic way that they provide valuable diagnostic data. As for the others, the degree of mobility in different people, in the two sexes, and at different ages, is so variable that there is no standard by which one can judge whether the range of spinal and hip movements is diminished. In the erect position, forward bending of the trunk is limited and causes pain in both forms of strain. If the patient sits down, forward bending becomes comparatively free and painless in sacro-iliac strain, but this is not so in lumbosacral cases. A sufferer from sacro-iliac strain stoops by combined flexion of the spine and hips until the hamstrings become taut. The movement is then arrested because of pain in the affected joint and can be continued only by flexing the knee on the affected side to relax the hamstring tension. A patient with lumbosacral strain stoops forward by flexing the hips and knees, and the lower spine is held as rigid as possible. Lateral flexion of the spine is less restricted in sacro-iliac than in lumbosacral strain. Smith-Petersen [63] has found that passive flexion of the lumbar spine, produced by the examiner flexing the knees and hips while the patient is in the supine position, is much more likely to cause pain in lumbosacral than in sacro-iliac cases because the pelvis tends to move as a whole, thus eliminating movement at the sacro-iliac joints. All these signs and tests considered individually are inconclusive, but they may fit in with others just as pieces fit into a jig-saw puzzle, until a clear picture is evolved from the scattered fragments.

TREATMENT

During the acute stage rest in bed for 2–6 weeks is essential. In the early stages sedatives may be necessary to relieve the pain, and hot fomentations or cold compresses are soothing. The patient should lie on a firm bed, but soft pillows placed under the knees and the lumbar region often give relief. If the pain persists, the back should be strapped with 3-in. wide adhesive plaster, one layer being applied obliquely and another vertically, from the level of the lower dorsal spine to the trochanters; anteriorly the strapping should not extend further than the lateral abdominal lines. In a severe case the patient should be nursed on a posterior plaster shell.

When the acute symptoms have subsided, local massage should be commenced and physiotherapeutic measures instituted. These aid in the absorption of effusion, relieve discomfort and stiffness, and expedite repair. Ultra-violet radiation, radiant heat, radiotherapy, ionisation, or diathermy may be

employed either alone or in combination, and seldom fail to produce a beneficial effect. Graduated passive and active movements should be commenced in six or seven days, or earlier, and should be continued until full movements are allowed in the sitting or recumbent position by the end of 10–20 days, according to the acuteness of the symptoms. These movements prevent the formation of periarticular adhesions which are so often the cause of persistent pain and disability. Deep-breathing exercises in bed are advocated by one or two writers. In the severer cases the patient should be provided with a plaster jacket, or a properly fitted back brace, when he is allowed up; women prefer strong, specially made corsets. The corsets or back brace should be worn during the day for three months to allow of complete healing of ligaments, but the prolonged use of a brace is necessary only in exceptional cases. A course of remedial exercises to strengthen the back and abdominal muscles and to correct postural defects should be prescribed, and these have been advocated as a prophylactic measure after childbirth. Women should be advised to avoid pregnancy for at least a year after an acute lumbosacral strain.

In chronic strain, rest in bed for a short period at the commencement of treatment is beneficial, and physiotherapeutic measures are as important as in acute strain. The patient's general health should receive attention, constipation is treated, and septic foci are eradicated. Large abdominal neoplasms or cysts are removed, and obese patients or those with pendulous abdomens should be put on a suitable diet and fitted with an abdominal support. A back brace is not always necessary or advisable as it focuses the patient's attention too much on his weak back, but, if the pain and disability are considerable, and especially if the patient's work is arduous, there should be no hesitation in prescribing one. Faulty posture should be corrected, and if it is due to any remediable cause, such as a deformity of a lower limb, this must be treated by operation, or by a suitable orthopædic appliance. The patient should be warned against heavy lifting and against working in awkward positions for prolonged periods.

Persistent pain and stiffness often point to adhesions interfering with the joint action or pressing on nerves or nerve-endings and no amount of heat, diathermy, or ionisation will affect them. Manipulation to break down the adhesions, followed by careful after-treatment to prevent their recurrence, is the logical remedy. The recognised treatment for persistent stiffness in a knee or shoulder after an injury is manipulation, but the application of similar measures to a stiff spine following trauma has not received the same wide recognition. Riches,[54] working under Bankart at the Middlesex Hospital, claims that manipulation is successful in 90 per cent. of cases with chronic back strains, and "where there is evidence of definite exciting trauma, success may be anticipated in almost all cases." He adds, however, that the improvement in cases of lumbosacral strain is not always permanent, although the permanency or otherwise of the relief is largely dependent on the efficiency of the after-treatment. The method of spinal manipulation described by Jones and Lovett[32] in their treatise on "Orthopædic Surgery" is the best. A general anæsthetic is given, the knees and hips are acutely flexed in order to control the pelvis, an assistant steadies the shoulders, and the pelvis is moved in various directions until complete flexion, extension, lateral flexion, and rotation of the spine are produced. Before manipulation is performed recent radiograms of the lower spine must be examined to exclude other pathological conditions.

Finally we have to consider the type of case where efficient conservative treatment and even manipulation fail to give relief. This may be due to neurosis or to mechanical imperfections at the lumbosacral junction, such as articular processes arranged in the sagittal plane, interarticular neural arch defects, or an almost horizontal sacrum; in other cases the intractable symptoms are caused by superadded disease, and this must be treated. The patient may be so miserable and disabled that operative treatment becomes a necessity, but this should not be undertaken until conservative treatment has had a fair trial, and gross arthritic or other pathological changes negative operation in the opinion of most surgeons. In selected cases stabilisation of the lumbosacral region by Hibbs', Albee's, and other operations has given good results. A successful fusion operation effectually prevents lumbosacral strain by ankylosing the junction, and by shifting the point of weight transmission to a higher spinal level, which is mechanically more stable and less liable to strain. Chandler[17] has devised a method of "trisacral fusion" suitable for cases with combined pelvic joint strains, and Rich's[53] operation for stabilising the lower spine is designed for a similar purpose.

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TREATMENT OF DYSMENORRHŒA BY ALCOHOL INJECTION

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IN spite of the research, more or less scientific, of centuries, dysmenorrhœa still remains one of the most important and interesting problems of gynæcological practice. It is responsible for an appalling amount of physical and mental distress, and is economically a most costly disability, both nationally and individually. There is, of course, no doubt that the majority of the milder cases are amenable to medicinal treatment, and that a considerable proportion of the severer type react favourably to cervical dilatation; but there remains a large percentage of the latter who are unrelieved by any procedure short of sympathectomy, and it is for these that the technique described below has been devised.

RATIONALE

The object of the operation is to block the nerve pathway to the uterus at its nearest accessible point. The portion of this pathway which most conveniently lends itself to external intervention is the pelvic plexus of Lee-Frankenhauser, which concentrates most of the uterine nerve-supply in a comparatively small area. I have elsewhere [1] described this plexus in detail, but its relations are so important in the present connexion that it will be useful here to summarise their more salient features.

The plexus is a bilateral quadrilateral sheet of neurofibrous tissue lying on either side and in front of the ampulla of the rectum. It stretches forward to a point just short of the posterolateral border of the uterus immediately above the cervix, inclining in a plane parallel with the lateral pelvic wall at this level. In other words, the plexus lies obliquely upon the posterolateral part of the floor of the pouch of Douglas just above the corresponding vaginal fornix, its deeper portion, consisting mainly of parasympathetic (nervi erigentes) fibres, being contained within the uterosacral folds.

The internal iliac artery and vein lie somewhat behind and below the plexus, but the uterine vessels are fairly closely related to its lateral surface. This apparently alarming relationship is in reality of negligible importance, for the extreme mobility of the artery allows of its being pushed aside by the injecting needle without injury. In addition, actual puncture of the vessel appears to be relatively harmless (see below).

Medially is the lateral aspect of the rectal ampulla, to which the plexus is closely adapted. The ureter crosses its superior border from without inwards, to be related to its medial border for a short distance.

The pelvic plexus is the junction at which almost all the nerves supplying the uterus converge. From above it receives abdominal sympathetic fibres via the solar plexus, presacral nerve, and hypogastric plexuses, and the sacral parasympathetics (nervi erigentes) enter it from behind. The nerves to the uterus are distributed from its anterior border in the form of several strands.

The nerve-fibres in the pelvic plexus are inextricably mixed and interlaced, though it is true that the two main constituents—sympathetic and parasympathetic—lie in separate dissectable planes. This latter fact, however, is of anatomical interest only,

for practically it is impossible to differentiate the various motor and sensory fibres contained, and in any case the thickness of the plexus allows of very little discrimination by the exploring needle.

TECHNIQUE

With the patient in the lithotomy position, and under Evipan anæsthesia, the cervix is seized with vulsella and retracted towards the left. The right fornix is further exposed with the aid of a flat lateral retractor. A long graduated Gasserian needle is then passed horizontally through the vaginal mucosa at the side of the cervix for a distance of 0·5 cm., and the retractor removed. The needle is now passed backwards and outwards for approximately 1·5 cm. at an angle of 45° to both the sagittal and coronal planes, and guided by a finger in the rectum to a point 0·5 cm. from the side of the rectal ampulla. The needle is then withdrawn for 0·5 cm., and 1 c.cm. of 85 per cent. alcohol injected, the needle point being kept slightly but continually moving. The same procedure is then repeated on the other side.

DIFFICULTIES AND DANGERS

Perforation of the rectum with consequent cellular infection is avoided by making the injection 1 cm. away from that organ, as calculated from the internal finger. Injury to the ureter is prevented by adherence to the technique described, which keeps the needle point lateral to it. The uterine artery, if touched, usually slips away from the needle, but constant movement of the latter is a further safeguard.

Hofstetter [2] has suggested that the injection of a destructive substance like alcohol into the loose pelvic cellular tissue might cause a local aseptic necrosis. I have not encountered this complication, and experience with alcohol injection elsewhere leads one to regard it as only a very remote possibility.

It is unnecessary to use more than 1 c.cm. of alcohol on each side, for only a partial destruction of the plexus is aimed at. It must be remembered that the upper part of the plexus contains the motor nerves to the bladder, which have been shown by Learmonth [3] to be indispensable to the proper function of that organ. With the quantity of alcohol suggested, these fibres escape injury, but it is conceivable that larger amounts might damage them, with consequent urinary disorder.

RESULTS

Only 6 cases have been treated over a sufficiently long period to be worth recording, and in 3 of these the success of the method has been vitiated by the fact that a cervical dilatation was performed at the same time. But the ultimate result in all was complete and apparently permanent relief, an effect which appears to indicate the superiority of this operation over the ordinary dilatation, in spite of the small number of cases observed.

The latter procedure, as I have suggested elsewhere,[4] is really a form of sympathectomy, and owes its effect to the disruption of the sympathetic fibres in the cervix. The amount of this destruction is necessarily variable, depending as it does on the type of cervix, the extent and duration of the dilatation, &c., with the result that it relieves only about 40 per cent. of cases so treated. It therefore seems reasonable to attempt to improve this figure by a less crude and more complete denervation of the whole uterus by alcoholisation of the more centrally placed pelvic plexus, an assumption which is apparently justified in the results recorded.

MODE OF ACTION

The relief of dysmenorrhœa which follows the operation described above may be explained in three ways, viz.:

Interruption of sensory pathways.
" motor "
" irregular ovarian influence.

Interruption of sensory pathways.—The results of sympathectomy suggest, though they do not prove, that the autonomic nervous system is capable of conveying afferent pain-sensory impulses. Normally the contractions of the menstruating uterus are not appreciated by the subject, but when they are exaggerated impulses are transmitted to the sensory cortex, which contains, as Sheehan [5] has recently shown, the highest central sympathetic representation. It is reasonable, therefore, to suggest the interruption of this sensory pathway as the reason for at least part of the relief following the operation.

Interruption of motor pathways.—It has for a long time been assumed, and Moir [6] has recently proved, that spasmodic dysmenorrhœa is accompanied by a hypercontraction of the myometrium. The exact mechanism of the pain production is disputed, but the muscle spasm appears to be the main contributory cause. Now almost all the motor nerve-supply to the uterus passes through the pelvic plexus, and it is possible that destruction by alcohol of at least part of this supply might have the effect of abolishing the nerve impulses conveying the impulses to abnormal contraction.

Interruption of irregular ovarian influence.—The work of Blotevogel [7] and of Kennedy [8] has shown how completely the pelvic plexus is under the control of the ovarian autocoids; apparently it serves as the vehicle for the transmission of at least part of the ovarian influence on the uterus. Disorder of this influence is probably of primary importance in the causation of spasmodic dysmenorrhœa, and as it acts at least partly through the peripheral autonomic nerves, some of the beneficial effects of intervention on the pelvic plexus may be ascribed to this intervention.

It would appear, therefore, that the relief of pain is the result of interruption of the pathway of three separate and distinct impulses. It is difficult to assess the relative importance of these factors, but it is probable that destruction of the sensory nerves is the predominant one. The reason for this assumption is that unilateral alcoholisation of the parametrium relieves pain on that side only (Blos [9]).

COMMENT

The injection of alcohol for the relief of dysmenorrhœa was first introduced by Blos, of Karlsruhe, in 1929, and has since been practised by him on a good many cases. His technique, however, is quite different from the one advocated above, and consists in the infiltration of the parametrium with 8 c.cm. of 75 per cent. alcohol on each side. This method owes its success to the extensive destruction of the most peripheral uterine nerves, rather than of the pelvic plexus itself, and it seems more reasonable to alcoholise that structure directly in the manner described above. To Blos, however, must be given the credit for the invention of a procedure at once ingenious and practical, and one that is likely to be of permanent therapeutic value.

A modification of Blos's infiltration method has also been used by Young,[10] in the treatment of the syndrome named by him "broad ligament neuritis,"

with excellent results. What is, however, of more importance in the present connexion is the fact that those cases complaining of a coincident dysmenorrhœa were relieved of this symptom by the injection. I have since had the opportunity of demonstrating my technique to Prof. Young, and he agrees that, theoretically at least, it is preferable to Blos's original method.

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WHOOPING-COUGH

VALUE OF A SPECIFIC VACCINE IN TREATMENT

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FEW therapeutic measures can have given rise to more conflicting reports than the vaccine treatment of whooping-cough. Widely varying doses of whooping-cough bacilli, alone or in combination with other organisms, were used by the early investigators and the results, as might be expected, were equally varied.

In prophylaxis the reported results are excellent and the preventive value of a pertussis vaccine would seem proven. A protective vaccine to have any success must be prepared from the hæmolytic smooth form of the bacillus. Madsen,[1] using a vaccine of this nature, has obtained either protection or attenuation in recent epidemics of whooping-cough on the Faroe Islands. On the other hand, Krueger [2] believes that mechanical disruption of the bacillary body is necessary in order to avoid possible denaturation. In this way an endo-antigen is obtained and has been successfully used by Munns and Aldrich [3] in prophylaxis. It is doubtful whether the results obtained with pertussis antigen are any better than those achieved with the intact bacillus.

Success in prophylaxis has caused a revival of interest and has stimulated further investigations into the value of the newer vaccines or antigens in treatment. Stallings and Nicholls [4] treated 232 patients in the catarrhal and paroxysmal stage of whooping-cough with undenatured pertussis antigen. Abatement of symptoms appeared to follow, but the experiment was inadequately controlled. It is generally agreed that, if success is to follow vaccine therapy, the initial injections must be given early in the disease, large doses must be injected, and smooth colonies must be used in the preparation of a vaccine. Although such a vaccine has been enthusiastically advocated, the few adequately controlled experiments which have been carried out do not show that it is of any value in the treatment of whooping-cough.

PRESENT INVESTIGATIONS

It should be emphasised that we were not concerned with prevention. An attempt was here made to assess the value of a pertussis vaccine in the treatment of early cases of whooping-cough. Certain limitations are immediately imposed on such an experiment in hospital practice. It is the general experience that only in severe epidemics are whooping-cough cases admitted to hospital in the early catarrhal stage of the disease. This is probably due to the fact that, during marked prevalence, every cough is regarded with suspicion. In less severe epidemics, on the other hand, suspicion is not aroused until the cough has become paroxysmal or until a whoop develops. During the period of this investigation the epidemic was of moderate severity and, in consequence, early cases were limited to those already in the paroxysmal stage of the disease.

The investigation was conducted along the following lines: (1) Cases of whooping-cough, in the paroxysmal or early whooping stage, numbering 60, were graded according to severity on admission. (2) All the cases received routine treatment such as fresh air and simple drugs when indicated. (3) Half of them received, in addition, a specific pertussis vaccine. (4) In a certain number of cases leucocyte counts were done on admission and in early convalescence.

Classification of severity.—This is avowedly unsatisfactory in whooping-cough. Nevertheless, some classification is necessary for purposes of comparison and the following simple one was used:—

1. Total spasms in 24 hours did not exceed 10. Character of spasms mild—cyanosis never seen.
2. Total spasms in 24 hours exceeded 10 but not 20. Spasms of moderate severity—cyanosis occasionally seen.
3. Total spasms in 24 hours exceeded 20. Severe spasms with cyanosis the rule—convulsions occasionally.

All the cases in this series fell into the first or second group of this classification on admission. No case with a severe respiratory complication such as broncho-pneumonia was included.

Vaccine administration.—The vaccine was prepared from recently cultivated smooth strains of *Hæmophilus pertussis* and put up so that 1 c.cm. contained 10,000 million organisms. Bacilli used in making the vaccine were of proven virulence on guinea-pig injection, and when used for active immunisation of rabbits could protect them against fatal doses of a virulent culture of the same organism. Alternate cases of similar age and apparent clinical severity were given a routine course of this suspension subcutaneously. A course consisted of 0·2, 0·5, 1, 1·5, 2, and 2·5 c.cm. at intervals of 2–3 days. It was always possible to complete a course within 14 days of admission.

Reactions after vaccination.—Local reactions consisting of erythema and induration were common but transient. General reactions were rare. Three children had a sharp rise of temperature on the evening of injection, but by the next day the temperature had fallen to normal. A clinical impression was gained that children occasionally experienced an increase in frequency and severity of their spasms during the course of injections. The discussion of the significance of this finding we will leave for the moment.

VALUE OF VACCINE THERAPY

Children of approximately the same age and at the same stage of disease were alternately placed in the vaccine or control series and in this way two groups of cases were obtained. Table I. has been compiled to show the result of this classification. It will be seen in section A of this Table that, as far as age and stage of disease is concerned, the distribution is almost identical. It was hoped that the two

groups would be also identical as far as severity on admission was concerned. Reference to section B of the Table will show that this was not achieved. The distribution is less favourable for the vaccine series as the percentage within the Group 2 classification of severity is greater than that for the controls. This is readily explained by the fact that classification was attempted on the actual day of admission, in order that there should be no delay in the administration of vaccine. Early classification of severity in such a variable disease as whooping-cough has obvious disadvantages, and in this case has resulted in a disparity for which allowance must be made in any comparison of results between the two series. Allowance can be made in this way. If it can be assumed that the vaccine-treated cases, distributed according to severity on admission, would experience the same increases in severity after admission as the control series, then the total number of vaccine cases who might be expected to get worse would be 15·23. The actual number was 17 (Table II.). In like manner comparisons can be made between the number of vaccine cases who might be expected to cease whooping at a particular period of the disease and the number who did in fact cease at that period. Reference to Table II. will show that the vaccine cases behaved exactly as might be expected, except in the first four weeks of the disease. Here it is significant to note that approximately five fewer vaccine cases ceased to whoop at the end of two weeks, but that five more than were expected had ceased whooping at the end of four weeks.

It seems reasonable to assume, from the figures given in Table II., that the only demonstrable effect of the vaccine was a tendency to increase the severity of the spasms and to prolong the whoop beyond the 14-day period during which vaccine was being injected. This effect is in agreement with the clinical impression obtained during this investigation and has been previously recorded by Howell [5] in an investigation at this hospital. It need not necessarily be interpreted as a result of vaccine per se and might be attributed to a psychological effect. Information on this point could be gained in a future investigation by injecting the control series with small quantities of sterile water.

TABLE I

Showing Percentage Distribution of Cases: (A) *according to Age and Stage of Disease:* (B) *according to Severity on Admission.*

Age.	A						B		
	Controls.			Vaccine.					
	Paroxysmal.	Whooping.	Total.	Paroxysmal.	Whooping.	Total.	Severity grouping.	Controls.	Vaccine.
0–½ yr.	10·0	6·7	16·7	6·7	6·7	13·4	..	..	..
½–2 yrs.	13·3	20·0	33·3	13·3	20·0	33·3	1	70·0	50·0
2–5 ,,	20·0	16·7	36·7	13·3	26·7	40·0	2	30·0	50·0
5–10 ,,	0	13·3	13·3	6·7	6·6	13·3	..	..	..
—	43·3	56·7	100·0	40·0	60·0	100·0	..	100·0	100·0
	100·0			100·0					
	N = 30							N = 30	

CONCLUSIONS

The position with regard to vaccine treatment, as judged by this investigation, would seem to be clear. The injection in the paroxysmal stage of large doses of a pertussis vaccine prepared in accordance with modern methods and beliefs is shown neither to curtail the duration of the disease nor to ameliorate the symptoms. Indeed the only effect obtained was an undesirable one, although not serious. It is noteworthy that no case in the vaccine or control series was fatal. This, in face of the not inconsiderable mortality which prevailed for the general run of cases in the epidemic, appears to be a potent argument for the early hospitalisation of whooping-cough.

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TABLE II

SHOWING (1) INCREASES IN SEVERITY, (2) DURATION OF WHOOP, IN CONTROL AND VACCINE SERIES

Severity grouping.	Control series.						Vaccine series.									
	Cases	Increase in severity and per cent.	Duration of whoop.				Cases	Increase in severity.		Duration of whoop.						
			2 weeks.	4 weeks.	6 weeks.	8 weeks.				2 weeks.		4 weeks.		6 weeks.		8 weeks.
								Act.	Exp.	Act.	Exp.	Act.	Exp.	Act.	Exp.	Act.	Exp.
1	21	12 (57·1)	11 (52·4)	9 (42·8)	1 (4·8)	0 (0·0)	15	12	8·6	5	7·9	8	6·4	2	0·7	0	0
2	9	4 (44·4)	2 (22·2)	4 (44·5)	2 (22·2)	1 (11·1)	15	5	6·6	2	3·3	10	6·7	2	3·3	1	1·7
	30	16 (53·3)	13 (43·4)	13 (43·4)	3 (10·0)	1 (3·2)	30	17	15·2	7	11·2	18	13·1	4	4·0	1	1·7

Act. = actual. Exp. = expected.

CLINICAL AND LABORATORY NOTES

A SIMPLE TEST FOR GROSS NITROGEN RETENTION IN THE BLOOD

By John F. Barrett, B.Sc.

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Andrewes[1] in 1924 described a chemical test on the blood for the diagnosis of uræmia, which aroused considerable interest. Later workers,[2] assessing the value of this test, concluded that the reaction is found only in uræmia or severe renal inefficiency and stated that the retention of indican does not necessarily run parallel to that of nitrogenous bodies. The following test, which is much simpler to perform, does give results which follow the retention of nitrogenous substances, since a positive reaction is due to an increase in the creatinine fraction of the blood.

Reagent.—Add 25 c.cm. of 10 per cent. potassium iodide to 100 c.cm. of Nessler's reagent.[3] Under the conditions of the test, this solution no longer reacts with ammonia or with glucose in the concentration in which it occurs in the blood filtrate.

The *test* is performed by adding one volume of this reagent to one volume of tungstic acid filtrate from blood. It is considered positive if a definite greyish-white turbidity, resembling milk diluted with water, appear within 45 seconds. The test-tube should be held against a black surface and the temperature of the solutions should be 15–20° C.

Since this test takes two minutes to perform and requires only 1 c.cm. of blood filtrate, it should be a valuable aid to the laboratory analyst. In all positive cases smaller quantities of filtrate should be employed for the determination of urea and non-protein nitrogen, thus preventing ruined analyses due to large quantities of ammonia encountered unexpectedly.

Experiments indicate that the reaction is positive when the creatinine content of the blood is greater than 2·5–3 mg. per 100 c.cm. Blood preserved with formalin cannot be used for this test.

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[2] Harrison, G. A., and Hewitt, L. F.: Brit. Med. Jour., 1927, ii., 1138.
[3] Koch, F. C., and McMeekin, T. L.: Jour. Amer. Chem. Soc., 1924, xlvi., 2066.

AN UNUSUAL CONTRA-INDICATION TO THE OCCLUSIVE TREATMENT OF VARICOSE VEINS

By A. L. d'Abreu, M.B. Birm., F.R.C.S. Eng.

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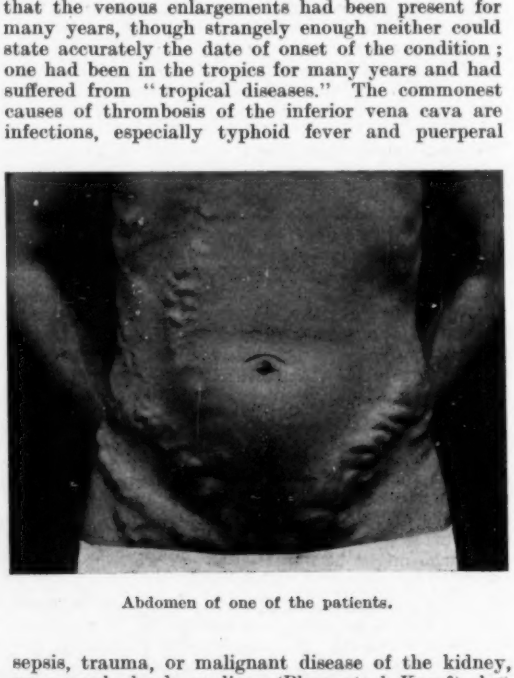
In examining cases of varicose veins of the leg I have twice encountered a condition which contra-indicated any attempt at obliteration. Both patients hopefully requested a cure by injection, but had such treatment been adopted it might well have led to disaster for both were suffering from thrombosis of the inferior vena cava. The diagnosis can be made by a glance at the abdomen. The usual practice is to examine the saphenous openings before instituting injection treatment, and the purpose of this note is to recommend that the abdomen also should be scrutinised. Neither of the patients informed me of the condition of the abdominal veins.

The accompanying photograph of one of them shows the enormously dilated, tortuous veins coursing upwards from the saphenous openings to communicate through the superficial circumflex iliac venous system with the lateral thoracic vein, which drains into the axillary vein; on the right side the superficial epigastric vein is dilated and anastomoses with the veins of the thoracic wall. The veins in both the lower limbs were enormously dilated and varicose. A similar picture was presented by the other case. Both patients were middle-aged men and in good health and on further questioning both admitted that the venous enlargements had been present for many years, though strangely enough neither could state accurately the date of onset of the condition; one had been in the tropics for many years and had suffered from "tropical diseases." The commonest causes of thrombosis of the inferior vena cava are infections, especially typhoid fever and puerperal



Abdomen of one of the patients.

sepsis, trauma, or malignant disease of the kidney, suprarenal glands or liver (Pleasants,[1] Kerr[2]), but neither the history nor the clinical examination of my patients disclosed any such cause of their condition. That they had survived for many years the occlusive effects of inferior vena cava thrombosis with no disability worse than that of severe varicose veins is not exceptional, for Parkes Weber,[3] Shattock,[4] and Kerr[2] have all reported their experience of cases with long survival and few symptoms.

The appearance in the case illustrated is characteristic of thrombosis of the inferior vena cava; Robinson[5] has recently published a similar picture. My object here is not to inquire into the pathology and clinical features of this disease, at least 318 cases of which have been recorded, but to indicate the value of looking at the abdomen before embarking on the injection of massive varicose veins of the legs. Sclerosis of such veins by injection must hamper unjustifiably the adequate collateral venous circulation that has been established.

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4. Shattock, S. G.: Ibid., 1913, vi. (Section of Path., p. 126).
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A VASOVAGAL ATTACK

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Fainting is a common occurrence and usually excites but little comment. Some years ago Lewis [1,2] drew attention to the slowing of the pulse and the lowering of the blood pressure observed during an ordinary attack of fainting. More recently he [3] again stressed these features under the heading of vasovagal attacks and pointed out that most faints in the absence of postural causes and heart-block are in fact vasovagal in origin. The slowing of the heart is due to increased vagal tone and is relieved by the injection of atropine,[3] but the lowered blood pressure is an independent phenomenon and presumably due to dilatation of the splanchnic vessels. The combination of these two factors is sufficient to rob the brain of an adequate supply of blood with the result that consciousness is either completely or partially lost.

The other day I had the good fortune to take an electrocardiogram of a patient during a fainting attack.

He was a man of 46 and was known to have suffered from œdema and ascites a few months before I saw him at the out-patient department at the Royal Hospital, but there was no reason to suspect that he had heart-block. (In this connexion it is interesting to note that Lewis [3] considers the commonest cause of fainting in cardiac subjects to be the ordinary vasovagal attack and not heart-block.) I had just removed a few cubic centimetres of blood from a vein at the elbow for a sedimentation test. At the sight of the blood in the syringe he became pale and sweated, but did not actually lose consciousness. A few minutes later whilst sitting in the electrocardiograph chair he fainted. The pulse at the wrist was impalpable. With a nurse supporting him I was able to obtain an electrocardiographic record of the vasovagal attack.

Lead I. (Fig. 1) was taken just before he fainted; it shows normal sino-auricular rhythm at a rate of about 70 per minute. The T-wave is inverted. Leads II. and III. (Fig. 1) were taken during the attack. It will be seen that the rate is considerably slowed. In lead II. (Fig. 1) the rate is 42 per minute, no P-wave can be made out, and the R–T interval is prolonged. In lead III. (Fig. 1), whilst he was slowly regaining consciousness, the rate has risen to 52, the P-wave has reappeared but is inverted, and the P–R interval is shortened.

The second electrocardiogram (Fig. 2) was taken within five minutes of the first. By this time he had completely recovered. The heart-rate is 71, 68, and 68 respectively in the three leads, there is no longer any inversion of the P-waves, and the P–R (and R–T) intervals are the same as before the attack.

No blood-pressure readings were taken, but it was noted that the pulse had disappeared at the wrist during the time he was unconscious. The striking features in the electrocardiogram are the disappearance of the P-waves during the unconscious stage and its reappearance, inverted, whilst he was coming round. It would appear that the sino-auricular node was temporarily in abeyance and that the auriculo-ventricular node had taken over its function. Since the P-wave is completely lost it must be buried in the ventricular complex, and for this to occur the impulse must have arisen low down (anatomically) in the A.V. node at such a point that the auricles and ventricles are stimulated simultaneously (the auricle by retrograde spread from the A.V. node). Presumably with the increase of vagal tone the S.A. node has been thrown out of action and the A.V. node, which is known to possess less inherent excitability, has taken over its function as pacemaker. Equally interesting is lead III. (Fig. 1) in which the rate has risen to 52 per minute and an inverted P-wave makes its appearance. The P–R interval is also a little shorter than in lead I. before the attack had begun. Evidently the impulse is still arising in the A.V. node, but at a higher level such that the auricles are stimulated to contract before the ventricles. The inversion of the P-waves indicates that the spread in the auricle is still retrograde. The second electrocardiogram (Fig. 2), which was taken after recovery, resembles lead I. of the first and denotes complete restoration of sino-auricular rhythm, the level of impulse formation having shifted from the upper level of the A.V. node to the sino-auricular node itself.

CONCLUSIONS

(1) An electrocardiographic record of a vasovagal attack is shown. (2) The slowing of the heart is due to the auriculo-ventricular node having taken over the function of the sino-auricular node as pacemaker. Separate leads show the impulse arising at different levels in the auriculo-ventricular node. (3) On recovery sino-auricular rhythm with its enhanced rate is restored.

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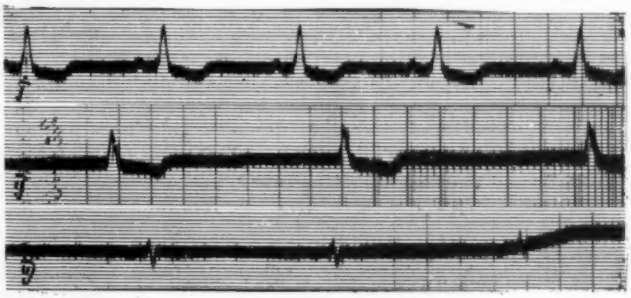

FIG. 1.—Lead I., before attack. II., unconscious. III., coming round.

FIG. 2.—After recovery from attack.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF SURGERY

AT a meeting of this section on Jan. 1st, Mr. W. SAMPSON HANDLEY, the president, being in the chair, Mr. G. H. STEELE read a short paper and showed a film on

Retrograde Œsophagoscopy

The results of treatment of cancer of the œsophagus were, he said, highly unsatisfactory. Only a few cases could be operated on, because of the age of the patient and the wide spread of the growth, and the operative mortality was enormous. Irradiation treatment could be described as hopeful but no more. The ideal technique seemed to be deep X rays, and some remarkable cases had been recorded, but this seemed to make the patient very ill and sometimes caused fibrosis of the lungs, while the relief granted was only temporary. The application of radium transpleurally had a very high mortality and poor results, while large doses in the lumen were unsatisfactory. The operations of intubation and gastrostomy were purely palliative. Better results were obtainable from insertion of radon seeds through the œsophagoscope. This did not upset the patient and caused no appreciable mortality. In many cases it produced definite healing of the visible upper end of the growth with relief of dysphagia for a period varying from six months to three years. If the lower end were approached from below almost the whole length of the œsophagus became accessible. Both ends of the growth could be irradiated, but the extra-œsophageal spread would have to be dealt with by X rays. The operation, which was shown in the film, was performed with a Jobson's introducer, the œsophagoscope being passed by direct vision. Cures were not claimed, only a great increase of comfort. Of four cases treated from both ends, one had died six weeks later from innominate artery hæmoptysis. At post-mortem the growth was healed in the œsophagus but had extended to the artery. The second patient had lived perfectly comfortably for nine months and then had died of aortic hæmatemesis. In a third case the two operations had been performed simultaneously—perhaps a mistake—and the patient had died of mediastinitis five days later. The fourth was alive and well after six months and having deep X rays for the extra-œsophageal extensions.

Prof. J. PATERSON ROSS said that the technique at St. Bart.'s had been modified to obviate fibrosis of the lung, and asked Mr. Steele how he estimated the depth of the growth. Dealing with it from both ends was a great advance.—Mr. STEELE replied that radiographs taken in the recumbent position gave a fair idea of the extent of the growth. He had not attempted irradiation during the operation.

Mr. T. B. JOBSON complimented Mr. Steele on the advance he had made. Chevalier Jackson had told him he had never had a cure. If only a case could be treated early enough, there was no reason why cure should not be obtained by Mr. Steele's method. The film showed that the radon seeds introduced from below overlapped those introduced from above.

The PRESIDENT commented on the advantage of intra-tumoral methods and thought that a combination of these with deep X rays would be better than the latter alone. The present method also facilitated gastrostomy, if this were necessary. If the patient refused radiation, pancreatic ferment with sodium bicarbonate by the mouth might give relief in many cases, healing the ulcerated surface and restoring the power of swallowing.

Dr. H. L. MARRIOTT read a paper by himself and Dr. A. KEKWICK on

Continuous Drip Blood Transfusion

The average in 87 cases, he said, was 5 pints and 29 hours, the largest figures being 11 pints and 62 hours. Present conceptions in regard to dose needed revision; a pint was woefully inadequate for an anæmic patient, especially if he were bleeding. The principle should be made one of quantitative measurement and the restoration of a normal hæmoglobin percentage. Hæmoglobin estimations should check the transfusion. Clinical results were commensurate. The necessity for slower administration followed from these large doses. There was, however, more in administration than met the eye. A. E. Boycott and C. L. Oakley, working with rabbits, had shown that large transfusions did not affect the plasma volume; the added plasma was extruded and the added cells retained. This process went on during the transfusion if given slowly enough. The best rate was to try to increase the patient's hæmoglobin by 10 per cent. every four hours—i.e., in the non-bleeding patient, a pint in four hours, or 40 drops a minute. In bleeding patients the rate must be governed by hæmoglobin estimations. If the patients were weak there should be three stages at intervals of a few days. The apparatus had been described fully in THE LANCET (1935, i., 977, and ii., 78). The blood was kept stirred by bubbling through it a slow stream of filtered oxygen. It was important to bleed donors by a closed method, to avoid droplet infection from the operator. On an average four or five donors were used for each transfusion. The great majority had been friends and relatives, as it did not seem right to deplete the Red Cross service for large transfusions. The approach to the relatives was important; the onus of finding ten or twelve donors must be put on them and no responsibility should be taken by the surgeon.

This method had proved extraordinarily effective. Most of the patients had had bleeding peptic ulcers or had needed transfusion before or after operation. Results had been very satisfactory and in some cases remarkable. In peptic ulcer the blood could be run in as it was lost; 18 out of 22 serious cases had lived and at least half of them could not have lived without the massive transfusion. Three of the deaths had been due to pneumonia and one to perforation. Eight cases of aplastic anæmia had been treated, but it was better to transfuse them once a week and not give the blood by the continuous method. Four transfusions had been done during operation, the blood being run in as the patient lost it and the hæmorrhagic element of shock eliminated altogether.

Mr. V. H. RIDDELL demonstrated by slides and a film a technique with an electrically-driven pump and pointed out its advantages and disadvantages. The latter were financial and mechanical. The apparatus cost 60 guineas, was manufactured abroad, and removed all the romance from blood transfusion. It was, however, simple and reliable and there was only a single rubber tube to sterilise. Less tubing was needed than in Dr. Marriott's apparatus, so that

obstruction due to clotting was less frequent. The rate of flow was absolutely constant and could be regulated. The blood could be introduced at body temperature, its container being surrounded by a bowl of water at 108° F. or a thermostat. The transfusion gave itself. The motor was supplied with a gear system and a reverse, and a revolving cam pressed the rubber tubing against the sides of the metal cup in which it rotated. The tubing was first filled with 3·8 per cent. citrate.

Mr. A. H. BURGESS asked whether this country could not do something similar to what was being done in Russia, where large quantities of blood were collected from the vessels of the newly dead. Accidental, suicidal, and cardiac deaths were used for this purpose.

Mr. ZACHARY COPE asked whether citrated blood was as good as other forms, and if there had ever been rigors in long-continued transfusions.

Mr. ROGERS asked what rate was used for children and how blockage was dealt with.

The PRESIDENT said that surgeons could be divided into ritualists and evangelicals; some liked elaborate methods while others sought simplicity. Blood transfusion seemed to be no exception.

Dr. MARRIOTT replied that the point of their work was dose and rate, not apparatus. A pump had advantages only in children; it was difficult to keep a rate of about 5 drops a minute steady by gravity, and the pump was therefore better. Gravity drip must be watched by a nurse, as it might block and cause reflux. The cooling effect in large transfusions was negligible and it was not worth while to warm the blood, with the risk of cooking it. Citrated blood was better than other kinds as the citrate had a hæmostatic effect in the body. Rigors were due to dead bacteria in the saline or citrate, and could be obviated. In the last thousand cases of drip saline at the Middlesex there had been 16 rigors, and ten of the patients had had them before. Stale blood clot in the tubing might also cause rigor, and fresh tubing should be used for every patient.

Mr. C. JENNINGS MARSHALL read a paper on the treatment of

Diverticulitis of the Colon

The condition was, he said, a newcomer to the pathological consciousness, but was nowadays frequently diagnosed clinically. Patients complained of left iliac fossa pain, and an acute attack often started while straining at stool. Local pain, backache, and slight pyrexia characterised chronic cases. The elongated swelling contrasted with the restricted tumour of cancer, which was afebrile and without backache. Gross obstruction was, in his experience, rare in diverticulitis. Radiographically there was a saw-tooth appearance with distortion and rigidity, but the appearance was suggestive only. The causative diverticulum was never seen, because it was obstructed and did not admit the opaque fluid. Stereoscopic radiography was particularly useful in determining relationships and operability. A perforating carcinoma might not infrequently have arisen in a diverticulum. Chronic cases needed very full investigation. The presence of blood and mucus in the fæces favoured cancer but did not prove it.

Acute cases were associated either with abscess or with perforation. Abscesses might be found in the loin or mesosigmoid. The abscess should simply be drained and the condition otherwise left alone. Perforating cases needed pelvic drainage followed by Fowler's position. The organism was generally a foul proteolytic germ. Fæces were not extravasated in the pelvis to any great extent on account of the obstruction of the diverticulum and the acute swelling surrounding it. There might be extravasation after separation of a slough. Stitching up was more likely to cause extravasation than to prevent it. There was no need to worry much; it was enough to anchor the appendices epiploicæ under the incision and drain. Nevertheless the ideal procedure, when it was possible, was a first stage Paul's operation, as this provided radical cure.

Chronic cases, correctly termed peridiverticular cellulitis, were amenable to careful treatment, but this was prolonged and irksome. The less nocuous lactic-fermenting intestinal flora should be encouraged by a low protein or wholly fruit and milk diet. Intestinal lubricants and lavage should be used to keep the stools soft. Roughage must be excluded. During active exacerbations glycerin per rectum was very useful. Cases should be regarded as "medical until proved surgical." Did diverticulitis, he asked, in fact recur elsewhere after excision? Persistence of pain, fever and obstruction, fistulæ and relapses were the chief indications for surgery. The Paul-Mikulicz method was the preferable one. Colostomy was necessary in severe pelvic matting and vesico-fistula.

Mr. M. F. NICHOLLS agreed that perforation did not cause gross infection and quoted a case in which the peritoneal exudate had been sterile and the diverticula had recovered without local treatment. A curious abdominal catastrophe was very likely to be a diverticulitis.

Prof. PATERSON ROSS spoke of the difficulties and dangers of vesical fistula. In one case a colostomy had been closed after six months and the fistula into the bladder had promptly reopened.

Mr. BURGESS agreed that there was no continuous leakage in diverticultis any more than in appendicitis, but communication might reopen when inflammation subsided, and go on indefinitely, as it did in vesico-colic fistula. The colon was far more septic in diverticulitis than in cancer, and any attempt to free it was very dangerous. A transverse colostomy was the best operation, and it might have to be postponed for six or twelve months. Any septic part became aseptic if completely short-circuited; therefore the transverse colon must be cut completely across and the ends separated. Eventually any desired operation could be done to clear up the condition.

The PRESIDENT corroborated the suggestion that diverticulitis might end in carcinoma, and said he had also found it to cause obstruction.

ROYAL ACADEMY OF MEDICINE IN IRELAND

AT a meeting of the section of medicine on Dec. 13th, 1935, with Dr. V. M. SYNGE, the president, in the chair, a paper on the

Infective Factor in Rheumatic Fever

was read by Dr. W. R. F. COLLIS. He showed charts demonstrating the following points:—

(1) Rheumatic fever follows acute hæmolytic streptococcal throat infections in a high percentage of already rheumatic subjects and in a small percentage of non-rheumatic patients.

(2) Both recrudescences and primary rheumatic attacks follow hæmolytic streptococcal infection only—not other infections.

(3) Rheumatic subjects are hypersensitive to the streptococcal endotoxin.

(4) In every case there is a definite sequence: acute pharyngitis → silent period (10–20 days) → acute rheumatism.

(5) Although the organism disappears from the surface of the pharynx soon after the pharyngitis subsides it can be obtained many months afterwards at autopsy from the centre of the tonsils, from the cervical and mediastinal glands, and occasionally from the spleen.

(6) Hæmolytic streptococci may be divided into biological groups: some of these cause throat infections which precede rheumatic fever; others do not.

(7) The blood of patients with acute rheumatism shows streptococcal antibodies (e.g., precipitins and anti-streptolysin). These are present while the disease is active but are low or absent during good health.

(8) There is a definite resemblance between the arthritis of serum sickness—which follows 10–20 days after injection of horse serum and occurs when the antigen (horse serum) and the antibody (precipitin) reach a certain titre in the patient's blood—and that of the acute rheumatic recrudescence.

Dr. Collis submitted that the infective factor in rheumatic fever is the hæmolytic streptococcus, and that the disease is due to interaction between breakdown products of the organism and the liquids and tissues of the body.

The PRESIDENT said he was interested to note Dr. Collis's remark that antibody production might be delayed by the giving of aspirin, and that this might prevent cardiac complications. If toxin-producing streptococci were the cause of rheumatic fever it seemed queer that scarlet fever should never be followed by the rheumatic type of valvular disease.

Dr. R. E. STEEN was not absolutely satisfied that the hæmolytic streptococcus was the cause of the rheumatic relapse. If a hæmolytic streptococcal sore-throat was the cause of acute rheumatism, it was surprising that one so seldom saw acute nephritis as a complication.

Dr. G. C. DOCKERAY pointed out that the incidence of streptococci in throats was very high.—Dr. L. ABRAHAMSON also referred to cases in which hæmolytic streptococci were present in the throat but the patients had neither clinical sore-throat nor rheumatism. It was sometimes stated that acute rheumatism was seen only in the poor, but this was not altogether true; he saw a good deal of it in private practice.

Dr. ALAN THOMPSON said it was well known that the titre of antibody corresponding to a particular organism might rise in response to any non-specific pyrexia. He thought it quite possible that the clinical exacerbations of rheumatic fever merely stimulated the rise of the streptococcal antibodies. In his opinion the experimental work described by Dr. Collis required considerable amplification before it could be accepted definitely.—Dr. J. C. FLOOD suggested that the work should be carried a stage further by trying to reproduce the lesions in animals.

Dr. COLLIS, in reply, said he fully realised that his hypothesis could not be accepted out of hand. The most important fact established was the association of the hæmolytic streptococcus and acute rheumatism. Criticism had centred chiefly on two points: (1) that the organism was often found in the throat of normal people and often caused acute pharyngitis unassociated with rheumatic fever; (2) that his hypothesis did not satisfy Koch's postulates or the generally accepted principles of disease processes. In reply to the former, he pointed out that the same could be said of nearly all germs found in the nasopharynx; recent work had shown that many very different organisms are at present included under the wide heading of "hæmolytic streptococci," and in future the mere hæmolysis of blood corpuscles would not be sufficient description for these organisms. As to Koch's postulates he could only say that he thought they were dead. It had been shown that erythema nodosum could in different circumstances be caused by infection with different organisms. A new and revolutionary attitude was needed towards disease, for the reactions of the body were as important as the invading germs in the causation of disease syndromes.

Dr. ABRAHAMSON and Mr. J. OWENS each reported a case of Syphilis of the Lung.

Genital Prolapse

Dr. J. F. CUNNINGHAM'S presidential address to the section of obstetrics and gynæcology dealt with the choice of operation in the treatment of genital prolapse. No one type of operation, he said, was effective for every degree and type of prolapse, and the cause of the condition should be carefully investigated in every case. He had found five different operations useful, with occasional slight modification. Simple colporrhaphy and perineorrhaphy was adopted for cases of small cystocele and rectocele when the tissues were good and the fascia capable of being repaired, and where there was no definite prolapse of the uterus. The Manchester operation was used in cases of uterine prolapse of the first or second degree, especially during the child-bearing period; but in patients near or past the menopause, where a large cystocele was the main feature, the interposition operation was preferred as being more certain in the ultimate result. Cases subjected to this operation must be carefully selected and the operation performed with close observance of detail, if unsatisfactory results were to be avoided. Vaginal hysterectomy, after Mayo, or combined with a Manchester colporrhaphy, was performed in cases of complete procidentia; this gave the best results, but attention must be paid also to the repair of the posterior vaginal wall and Douglas's pouch. Finally, Le Fort's operation was occasionally useful in elderly subjects where a more extensive operation might be dangerous. Dr. Cunningham quoted 161 cases operated on for prolapse; 121 by colporrhaphy (including Manchester), 16 by interposition, 19 by vaginal hysterectomy, and 5 by Le Fort's method. There was one death, from lobar pneumonia, and, on inquiry, 7 recurrences had been reported, 3 being in cases of colporrhaphy followed by one or more subsequent deliveries at term. Two were genuine recurrences, one was urinary incontinence, and one was a cervical hypertrophy. The conclusions drawn from the series were that colporrhaphy is unreliable, especially in elderly patients with atrophic pelvic fascia, but is the best type of operation in younger patients whose tissues are good. Interposition is excellent, but only in selected cases. Vaginal hysterectomy should be done in very bad cases, especially where the uterus is diseased.

Dr. GIBBON FITZGIBBON said he was glad that the President laid emphasis on the place of vaginal hysterectomy in cases of genital prolapse. A cause of confusion was the association of cystocele, rectocele, and prolapse all under the term "prolapse." The three were individual entities and needed definition. It was in cases of high rectocele that removal of the uterus enabled the uterosacral ligaments to be reached and incorporated with the lateral ligament in the restoration of the pelvic fascia to close the hernial

opening. The cure in these cases by operative treatment really depended on what part of the fascia was damaged, and the repair of that part of it. He did not believe in the necessity for the interposition operation. Where there was dropping of the cervix and cystocele, it was in his opinion never successful.

Dr. A. H. DAVIDSON said that since seeing the Manchester operation carried out in Liverpool he had done most of his prolapse work by this technique and found it gave good results. He had supposed that abdominal operations for prolapse had disappeared, but in London recently he had seen ventral fixation done for prolapse of the uterus. He was not very favourably disposed towards the operation of interposition, but thought it had a place—though an extremely limited one—in cystocele. He did not believe that vaginal hysterectomy was a cure for prolapse. It seemed to him important to stress the ætiology of prolapse: it was usually due to extremely bad midwifery.

Dr. T. M. HEALY agreed that the interposition operation cured cystocele. The difficulty was that the patient had no guarantee that she would not afterwards get a descent of her cervix, and the cure of this condition was extremely difficult. Vaginal hysterectomy was not a cure for prolapse unless the supports of the uterus were used to keep up the bladder, and the number of cases in which vaginal hysterectomy was necessary to cure prolapse of the bladder were relatively few. If anything was wrong with the uterus it should be removed, otherwise removal was unnecessary if the Manchester operation had been properly learned and if the technique was carefully carried out. Abdominal fixation of the uterus was good in elderly women with prolapse of the vagina, and a small uterus, when short anæsthesia was desirable.

Dr. O'DONEL BROWNE thought there was no doubt that anterior colporrhaphy and perineorrhaphy would cure cystocele and rectocele with one exception—high rectocele. Most of the cases in which good results were obtained by shortening the ligaments were cured by fibrosis. Prolapse of the rectal canal could be cured by injections of absolute alcohol.—Dr. A. W. SPAIN said he got very good results from the Manchester operation; any trouble he had was in the posterior wall. He thought that patients should be kept in bed for three weeks beforehand and given hot vaginal douches. He would never remove the uterus unless it was absolutely necessary to do so, and if a woman in the child-bearing age could be kept comfortable by the insertion of a pessary this ought to be done.—Dr. BOUCHIER HAYES believed that the whole question was really one of pelvic fascia and fibrosis.

Dr. R. M. CORBET said it was possible to have a cystocele without any prolapse, and it seemed to him unnecessary to push up the bladder and shorten the ligaments unless those ligaments appeared to be lengthened. He was rather in favour of vaginal hysterectomy for the larger type of prolapse; he agreed with Dr. Healy that it was not the hysterectomy but the bringing together of the ligaments that did good. He would advise spending more time in the preoperative treatment of these cases. Operation for high rectocele should if possible be postponed until the child-bearing period was over.

Dr. BETHEL SOLOMONS said that the Manchester operation suggested the conclusion that the main thing in dealing with prolapse was to shorten the tissues about the cervix and to repair the hernias, from which he had evolved his present technique—namely, (1) a high amputation of the cervix with shortening of the uterosacral ligaments; (2) approximation of the bladder pillars with an extensive anterior colporrhaphy and colpoperineorrhaphy. The results had been good in his own hands and in the hands of some of his assistants. Le Fort's operation was excellent for the old patient, but he did not believe that any abdominal operation was necessary, and unless the uterus was diseased hysterectomy should never be done.

The PRESIDENT, in replying, said he was not an advocate of drastic surgery in prolapse cases, and was not enthusiastic about vaginal hysterectomy or interposition. The important thing for keeping the organs in place was the fascia. He had at one time done interposition; then he had got enthusiastic about the Manchester operation and had done it; but now he had gone back to interposition. If the uterus was too big he did some other operation, and if it was too small he never did an interposition. He did not think the operation suitable in cases of procidentia. Vaginal hysterectomy alone did not cure prolapse, and he regarded ventral fixation as a bad operation for prolapse.

MANCHESTER MEDICAL SOCIETY

AT a recent meeting of this society Prof. A. D. MACDONALD, opening a discussion on the

Choice of an Anæsthetic

said that the ideal local or general anæsthetic has yet to be discovered. Only the volatile anæsthetics possess the controllability which makes possible the adjustments to varying needs and varying susceptibilities. The action of mixtures of aliphatic compounds is the sum of the actions of its components; there is no evidence of potentation, such as exists for morphine and other alkaloids followed by anæsthetics. The use of mixtures, such as A.C.E. and Schleich's, in which the volatilities of the components differ widely, is pharmacologically unsound. Premedication with non-volatile drugs is only justifiable in doses well below the average anæsthetic dose; it is possible that some may affect vital centres before they depress ordinary reflexes.

Dr. E. FAULKNER HILL, in all grave risks where time allowed, would invoke the aid of surgeon, physician, and biochemist as well as anæsthetist to estimate the survival power of the patient, and then enhance this power to the utmost by suitable preparation, diet, rest in bed, and appropriate treatment before operation. In the course of time this would lead to a coördinated and unbiased opinion of the merits of the various methods in common use. But the organisation of such a service would seem to call for the appointment of a special officer.

Mr. GARNETT WRIGHT, from a small personal experience of splanchnic anæsthesia, was hopeful that by its use (1) chest complications might be much reduced, (2) palliative gastrectomy for carcinoma might be safely undertaken more frequently, (3) operation for acute hæmorrhage might be rendered safer.

A lively discussion followed.

TIVERTON AND DISTRICT HOSPITAL.—An up-to-date operating theatre, an X ray room with new plant, and an anæsthetising room are being added to this hospital which has been much enlarged during the last few years. The new extensions will cost about £3000.

REVIEWS AND NOTICES OF BOOKS

Milk: Production and Control

By W. CLUNIE HARVEY, M.D., D.P.H., M.R.San.I., and HARRY HILL, M.R.San.I., A.M.I.S.E., M.S.I.A., Medical Officer of Health and Sanitary Inspector respectively, Borough of Southgate. London: H. K. Lewis and Co., Ltd. 1936. Pp. 555. 21*s*.

THE different aspects of milk are so numerous and the literature on the subject so vast that it is not really practicable in one volume even so large as this one to cover adequately every aspect of it. Many matters of importance are here ignored, but the authors have succeeded in writing a book of considerable value which covers, particularly on the practical side, all the essentials of milk production and control. It is on the scientific side—i.e., the basis upon which production and control must be founded, if sound methods are to endure—that the volume is inadequate. A saving of space on some of the technical points which are treated in unnecessary detail would have enabled rather more evidence on the scientific side to have been incorporated, giving the book a better balance.

As a practical handbook it can be praised with but few reservations. While critical enough in some directions, as for example on the subject of designated milks, the authors seem to be somewhat timid in exposing the essential defects in our present legislation. This diffidence is associated with a curious attitude to some recent studies upon milk. For example, when discussing designated milk and the classification of milk the authors do not refer to the important report of the Committee on Cattle Diseases issued by the Economic Advisory Council in 1934. That committee after the most exhaustive study and examination of expert witnesses agreed on a complete policy and made explicit suggestions as to the different standards for milk. The chapter on the Future of the Milk Industry might have been much more valuable if this report had been discussed. The impression left by the account of the Tuberculosis Order and Ostertag's method for reducing bovine tuberculosis is that these methods are capable of yielding good results if improved, whereas in fact they are now recognised to be unsound. The reason for the fact that Ostertag's method is not favoured outside Germany is that it has had no effect in reducing bovine tuberculosis.

As a practical guide to clean and safe milk production, however, this book will be extremely useful. Everywhere there is evidence of the authors' familiarity with this side of their subject. The chapter on the cowshed is particularly good, although many authorities will disagree with the contention that the value in double sheds of positions of head-to-head as against tail-to-tail is equally balanced. The dairy, clean milk production, and the distribution of milk are well discussed; a long chapter deals in great detail with the treatment of milk by heat, and not very well-known processes such as stassanisation and pasteurisation in the bottle are explained. The important matter of the control of pasteurisation plants by the inspector is fully described, but the possible defects of such plant and the ways to detect them are not detailed, while some essential points are omitted. Existing legislation is conveniently set out, as are also the essentials of laboratory and other control. The section on chemical analysis seems out of place, for analysts would hardly refer to it and its omission would have enabled some of the bacteriological laboratory problems to be discussed in more detail. The important phosphatase test is not even mentioned. Other chapters deal with the composition of milk, milk and disease, and the cow.

The monograph will certainly be found useful by medical officers of health and sanitary inspectors, while those concerned on the commercial side will find much instructive matter in its pages. The book is clearly printed and written in an attractive manner; the views expressed will be accepted by authorities as sound in the main, while there are many valuable illustrations. The bibliography is rather a poor affair.

Optical Rotatory Power

By T. MARTIN LOWRY, C.B.E., M.A., D.Sc., F.R.S., Professor of Physical Chemistry in the University of Cambridge. London: Longmans, Green and Co., Ltd. 1935. Pp. 483. 30*s*.

THIS book is a record of work and progress in polarimetry extending over a period of 120 years, from the original discovery of the optical rotatory power of quartz to the recent theoretical work of Max Born in Cambridge. It is a complete exposition of the subject by one who not only knows all its complexities, but has himself contributed much of the original work described. The first part of the book is mainly historical, but contains an interesting general account of the principles of rotatory polarisation. A reader with little knowledge of the subject will be able to appreciate and understand its elements. The work of Pasteur forms the basis of this section and reminds us that a man to whom medicine is greatly indebted has also contributed largely to an almost unrelated branch of science. The second part deals with the practice of polarimetry, of which the applications are almost unlimited. The measurement of rotatory dispersion in both the ultra-violet and infra-red portions of the spectrum is clearly dealt with and a description is provided not readily available elsewhere. The book concludes with a theoretical account of the subject, which of necessity assumes an adequate knowledge of mathematics in the reader.

Prof. Lowry has produced a book on a difficult subject that is admirable both in intention and execution.

The Microscopic Anatomy of Vertebrates

By G. G. SCOTT, Ph.D., Professor of Biology, City College, New York City; and J. I. KENDALL, Ph.D., Instructor in Biology in the College. London: Henry Kimpton. 1935. Pp. 306. 17*s*. 6*d*.

HUMAN anatomy is made both more intelligible and more interesting if taught from a comparative standpoint. The same could be said of histology, though in this case the comparative method has seldom been applied. The chapters of this book deal separately with the microscopic structure of the main vertebrate organs. In spite of the authors' implication to the contrary in their preface, the emphasis is placed entirely upon mammals. The brief account of the particular organ as found in the lower vertebrates, which in some places precedes a description of the mammalian structure, is seldom full enough to afford a valuable comparison. Neither the evolutionary nor the functional significance

of the changes in microscopic structure is emphasised. In several instances, a notable example being the pineal body which has a particularly interesting evolutionary history, no mention whatever is made of the structure as found in the lower vertebrates. There is little value in descriptions of a variety of types unless relationships are discussed. This book will certainly provide a usefui introduction to mammalian histology, but the authors have not succeeded in presenting the subject in a truly comparative manner.

A Companion to Manuals of Practical Anatomy

Fourth edition. By E. B. JAMIESON, M.D., Senior Demonstrator and Lecturer on Anatomy, University of Edinburgh. London: Humphrey Milford, Oxford University Press. 1935. Pp. 661. 12*s.* 6*d.*

HERE, packed into small space, is a mass of detailed and highly accurate information. The section on the central nervous system is worthy of special mention. The adoption of the English terminology (Birmingham revision) has doubtless contributed to the success of this little book which is as useful a pocket manual as anyone could wish for.

Minor Medical Mysteries

By LEONARD WILLIAMS, M.D. Glasg. Foreword by Lord HORDER. London: Cassell and Co., Ltd. 1935. Pp. 211. 5*s.*

Dr. Leonard Williams is well known as an accurate clinical observer, possessing clear-cut and often individual views, and as a pungent writer. These qualities appear in his latest collection of essays in which, however, he hardly does himself justice. The reason for this may be that many of the essays were communicated to magazines where space has to be dictated by the editor to the disadvantage of the contributor. It is clear that when 30 medical or semi-medical subjects, all of a sort that invite discussion, are dealt with in 200 small pages, the author cannot develop his theme, and this will be a matter of regret to Dr. Williams's readers, because of the challenging nature of many of his statements and conclusions which are put down with wit and wisdom. Lord Horder's foreword is a just encomium.

Fifty Years a Surgeon

By ROBERT T. MORRIS, M.D. London: Geoffrey Bles. 1935. Pp. 276. 10*s.* 6*d.*

THERE have been many books published composed of personal reminiscences centring round the developments of medicine in the nineteenth century, but Dr. Morris's addition to their number has a claim to attention. It is well and brightly written, and the picture supplied of surgical advance in the United States is dramatic. We have a picture of a great American medical school in the 'eighties, and the revolution caused in the Bellevue Hospital, New York, by the introduction of antisepsis. The great advances in technique now made possible are set out, while the perfecting of the methods of administering anæsthesia are shown to have enormously extended the range of the surgeon's utility. There is nothing new in these chapters to the medical reader, but the general public should be edified by their contents. The personal record of private and special practice is written with zest and leads to a chapter entitled "the fourth era in surgery," by which Dr. Morris means the appreciation in surgical treatment of the influence of the patient's own physiology. This is probably the section whose writing determined Dr. Morris on publication. It is an able but partisan denouncement of surgical interference where the chances of recovery without operative aid have been underestimated. And we learn with no surprise that some of the author's colleagues have not been in agreement with his views.

The book ends with chapters on such much-discussed topics as osteopathy and therapeutic fads, psycho-analysis, birth control, and certain forms of professional delinquency, where the opportunity for telling stories is happily made use of.

Diseases of the Liver, Gall-Bladder, Ducts and Pancreas

Their Diagnosis and Treatment. By SAMUEL WEISS, M.D., F.A.C.P., Clinical Professor of Gastroenterology, New York Polyclinic Medical School and Hospital. With a chapter on Surgery by J. PRESCOTT GRANT, M.D., F.A.C.S., M.R.C.S., Professor of Surgery, and a chapter on Roentgenology by A. JUDSON QUIMBY, M.D., F.A.C.R., Professor of Roentgenology at the same school. New York: Paul B. Hoeber, Inc. 1935. Pp. 1099. $10.

Prof. Weiss has written this book at the request of his colleagues and students, and offers it as "primarily a practical one" to the medical student, the general practitioner, and "even the specialist." It is in the form of a large and fairly comprehensive systematic treatise. Historical, anatomical, and physiological aspects of the subject are briefly dealt with at the beginning. Descriptions of morbid anatomy appear in their proper places, but overstressing of pathology is deliberately avoided. Clinical descriptions of disease, methods of examination—including large numbers of laboratory methods—and treatment occupy most of the book. It is profusely illustrated with drawings, photographs, and radiograms, all beautifully reproduced. Paper and print are beyond cavil; our only criticism of the production is that the book is uncomfortably large and heavy. Some of its bulk might easily have been reduced, since the white margin round every page is so excessively broad that its area exceeds that of the printed part.

The text is curiously unsatisfactory. Its English style, when due allowance has been made for recognised Americanisms, often lacks the precision that should characterise a scholarly work; the clay- or putty-coloured stool of obstructive jaundice, for example, is repeatedly described as "discolored." Where the author is noting his own observations, or clinical conditions familiar to him, he is naturally happier, but much of his material is drawn from the literature, and interjected in the form of short paragraphs; critical appraisal of these contributions and synthesis of them into a coherent picture is often wanting, and at times indeed an entirely wrong impression emerges. Thus under the heading "pancreatic diabetes" a two-page account of diabetes is included for the sake of completeness, and it opens with the sentence, "The causes of diabetes are the causes of obesity, the two conditions being constant companions"; this is surely an overstatement even of Joslin's view. In "bronzed diabetes hæmochromatosis" it is said that the skin and organs are red-brown—in most cases the skin is actually leaden-

grey—and that in the final stage of the disease diffuse carcinoma of the spleen is common. Even where the author draws directly on his own experience he is often disconnected and unconvincing, as where he describes a case of thyrotoxic auricular fibrillation with congestive heart failure and hepatic enlargement to illustrate the connexion between gall-bladder disease and cardiac pain. This sort of muddled presentation is so pronounced in the chapter on cirrhosis of the liver that it must reflect a confusion, and therefore an inaccuracy, of thought. A broad classification into "Laennec's cirrhosis (atrophic, portal, multilobular)" and "Hanot's cirrhosis (hypertrophic, biliary, monolobular)" is first adopted. The author then describes a number of varieties of cirrhosis, whose relation one to another is by no means clear, and the reader, among other uncertainties, has no means of telling whether the two separate descriptions, of "simple hypertrophic cirrhosis (Hanot-Gilbert)" on pp. 417–420, and of "biliary cirrhosis (Hanot's syndrome)" on pp. 430–438, refer to the same disease or not.

The book as a whole contains a great deal of valuable material, but it seems to have been put together by a hurried compiler rather than built by a careful architect, and on that account it does not fully justify either the beauty of its production or the labour that has gone to its preparation.

Streamline for Health

By PHILIP B. HAWK, Founder of Food Research Laboratories, Inc. New York and London: Harper and Brothers. 1935. Pp. 186. 10*s*. 6*d*.

Dr. P. B. Hawk will be remembered as one of the collaborators with Rehfuss in certain fundamental physiological inquiries which were published in the American medical literature soon after the war. His system for safe weight reduction consists chiefly in a low calorie diet based on cow's milk, orange juice, and lettuce, and of periods of repeated fasting, or semi-fasting, with restricted diet in between them. Some would call the style of this book racy, others would say that it was full of frank Americanisms. In any case the language is such as to make little appeal to the majority of English readers. This is the more regrettable because it is essentially one of the sounder books on weight reduction recently published. Readers who can struggle through chapters with titles such as "Is Science cockeyed? Hay! Hay!" will find accounts of many instructive experiments and apt criticisms of many unscientific methods of "reduction."

Russell A. Hibbs

Pioneer in Orthopædic Surgery, 1869–1932. By GEORGE M. GOODWIN. London: Humphrey Milford, Oxford University Press. 1935. Pp. 136. 10*s*.

Dr. Goodwin has written an instructive book about an interesting man. The story of Hibbs's life is worth more attention than many of the medical biographies which reach the public to-day, for the reasons which led to his success call for record alike as a surgical innovator and a hospital administrator. Throughout a very busy life he seems never to have departed from the one idea which he set before himself—namely, to be a champion of the cause of the crippled child. All that he did centred round that object. With no private backing or influence, but rather by determination, he obtained a post in an orthopædic hospital which needed reform and which, when reformed, would call for extension. He became immediately involved in a dispute with a superior officer, and to the disgust of that superior was held by the lay authorities of the hospital to be right. But many prominent members of his specialty resented the victory of the junior man and proved less than helpful to him when his private practice began to grow. The brief biography shows how Hibbs was able to overcome professional opposition and to reach a high position as an orthopædic specialist, although certain of his theories were never universally accepted. What they were, and how he gave practical effect to them, will be gathered from a series of cases, added as appendices, which make informing reading.

Genetics

By H. S. JENNINGS, Henry Walters Professor of Zoology and Director of the Zoological Laboratory in the Johns Hopkins University. London: Faber and Faber Ltd. 1935. Pp. 351. 15*s*.

MODERN genetics has given rise to more unwarranted and dogmatic generalisations than almost any other branch of science. At every stage in its development the particular facts have seemed to point in an attractive manner to far-reaching general conclusions. Popular books on the subject seldom describe the experimental evidence fully enough to allow the reader to judge for himself of the validity of these conclusions, and this is unfortunate in view of the interest taken by the educated public in the possible application of genetic principles to human affairs. The groundwork of the subject however, as Prof. Jennings points out, "involves detailed facts and relations which must be thoroughly grasped," and the general reader who wants to be put into a position to form opinions is faced with some hard work.

Prof. Jennings gives a clear account of the chromosome theory with continual reference to the original work on which the theory has been based. He does not doubt that in a stable environment all inherited characteristics are determined by the genes, which are borne in a linear fashion upon the chromosomes. Beyond this point he suspends judgment, presenting the facts and various different conclusions which might be drawn from them. He shows how the original idea of the fixed action of a gene is being rapidly undermined. There is now some evidence that the action of a gene is dependent upon its position in relation to other genes. Should this prove to be correct "it would require a reinterpretation of many of the accepted ideas of genetics." The unsatisfactory state of our knowledge about the relative influence of hereditary and environmental factors on human characteristics is emphasised. The book concludes with two interesting chapters on genetic variations, natural and induced by radiations. There can be no doubt that many species have diverged from a common stock to a limited extent as a result of eliminations, reduplications, and translocations of chromosomes. But Prof. Jennings seems to be of the opinion that, whatever kind of variation has formed the basis of progressive evolution, the changes in the action of single genes which have so far been observed and are known as mutations have not necessarily thrown much light upon the problem. This is certainly an unorthodox suggestion, but it must be admitted that the mutation theory of evolution is by no means as firmly established as is often assumed.

THE LANCET

LONDON: SATURDAY, JANUARY 11, 1936

PHYSICAL EDUCATION

THE year 1935 will be a memorable one in the history of physical education in this country. The prominence given to physical fitness by the King's Jubilee Trust Fund has stimulated official and voluntary organisations concerned with gymnastics and games for children and young people to greater energy, while the need for recreative and enjoyable occupation for unemployed men and women in distressed areas has led to the setting up of schemes for physical training which, it is hoped, will be developed and extended to the great benefit of national health and physique. Physical training has been slow to receive adequate recognition in England. It first became a normal and regular part of the elementary school curriculum in 1909. Sir ROBERT MORANT, then secretary of the Board of Education, realised not only its importance to the health of the growing child, but its close association with the school medical service and hygiene. Therefore he entrusted the preparation of a revised syllabus of physical exercises to the medical department of the Board, and placed the newly appointed staff of special inspectors under the general control and guidance of Sir GEORGE NEWMAN. The progress of physical education may be read in the successive reports of the chief medical officer. A new syllabus was called for in 1919, and yet another in 1933; from time to time supplementary matter has been issued dealing with particular problems such as the organisation of games, the work in small country schools, the value of playing fields, and so forth; and there are other books now in preparation which will provide for the needs of the older boys and girls in the senior schools.[1]

The general policy of the Board of Education has been to leave physical training in the elementary schools in the hands of the class teachers; to give all teachers some special training, but to encourage them to supplement this by attendance at suitable vacation courses and classes; and to support the appointment by local education authorities of expert organisers whose duties include general supervision of physical training and advice to individual teachers. This policy has been successful, but it is pleasing to note that the Board now appear to be pursuing it with greater energy, and that increased attention is being paid to secondary education in this subject. Systematic physical training, as apart from games, has been seriously hampered in public and secondary schools for boys by the lack of trained gymnastic masters; even now there is only one training college for men—viz., Carnegie Hall, founded at Leeds a few years ago by a grant from the Carnegie United Kingdom Trust—whereas for 50 years there have been facilities for the training of women. Fortunately the growing demand for teachers and "leaders" is bound to result in more ample opportunities for training, as well as greater scope for employment after qualification. But the authority of the Board is limited to schools and educational work, and there is a strong feeling that much more might and should be done for the promotion of physical activity in its broadest sense, not only among young men and women, but among older persons of both sexes. The "keep fit" movement, for example, which originated in Sunderland and is rapidly spreading over the whole country (see p. 125), is providing healthy physical interests for hundreds of women, many of mature age, who had never experienced the joy of movement before. Gymnastic classes and games are doing the same for young men. The Central Council of Recreative Physical Training, a representative and voluntary organisation established early last year under the patronage of the KING and QUEEN and the presidency of Lord ASTOR, has been formed to coördinate and encourage all types of recreative activity.[2] The national playing fields association, organisation for the promotion of athletics, swimming, camping, hiking, as well as games, dancing, and gymnastics, are all combining to arouse a much wider appreciation of the value of exercise, open air, and sunshine, and to show that no one need feel too old or too stiff to enjoy some form of exercise.

In this country we have long been proud of our traditional games, though they have been played by the few rather than the many. Our system of gymnastics was borrowed mainly from the Scandinavian countries. But at long last we are beginning to develop a scheme of physical education of our own, which we hope will be characteristically national. We shall take full advantage of the experience and knowledge of other lands, but shall adopt, modify, and add to this so as to meet the needs of our climate, our social and educational conditions, and our national habits and customs. Physical education, wisely used, has an immensely important contribution to make towards a state of positive good health, which is something much better than the mere prevention of disease.

THE CYTOLOGICAL EXAMINATION OF MILK

THE microscopical examination of milk for tubercle bacilli is preferable to the biological test in so far as it is simpler and quicker. Unfortunately these advantages are counterbalanced by

[1] See the report of the C.M.O. of the Board of Education for the year 1934. H.M. Stationery Office. 2s. 6d.

[2] This council has just issued its first news leaflet, which may be had from the organising secretaries, 11, Doughty-street, London, W.C.1.

the fact that the organisms cannot be seen in milk under the microscope unless present in enormous numbers. According to D. R. WOOD [1] the microscopical test is 500 times less sensitive than the biological; and estimates of the same order have been made by other workers. Such comparisons refer to the classical method of examination which consists in laboriously searching smears of milk deposit under the oil-immersion lens for acid-fast bacilli; and the weary observer derives little comfort from the reflection that the finding of such organisms carries no assurance that they really are tubercle bacilli and not saprophytes. More recently attention has been turned from the direct examination of films for acid-fast organisms to the study of the cells found in milk and their relation to tuberculosis. H. L. TORRANCE [2] drew attention to the occurrence of certain more or less characteristic groups of cells to be found in tuberculous milk. Other workers have confirmed these findings, and S. T. COWAN and L. MADDOCKS [3] now report the results of a careful study of the cytology of 229 samples of milk from single cows. If centrifuge deposit is spread in a thin film and stained the cells are for the most part distributed uniformly over the whole surface; but here and there clumps of cells are encountered. These may be composed of endothelial cells, non-endothelial cells, or of a mixture. COWAN and MADDOCKS found that whilst such cell groups might be present either in tuberculous or non-tuberculous milk, more of them, particularly of the endothelial type, were observable in tuberculous milk. It was also found that in tuberculous samples acid-fast bacilli showed a tendency to collect near the cell groups; bacilli lying far away from these groups were more likely to be non-pathogenic ones. Thus a large surface of a smear may be looked over rapidly under a low magnification, and the areas containing endothelial cell groups can then be subjected to examination for the presence of acid-fast bacilli under a high magnification. The 229 samples examined in this way by COWAN and MADDOCKS were also tested on guinea-pigs. From 38 of them tuberculosis was produced in these animals, in 7 of these cases the degree of contamination being slight if judged by the extent of the lesions produced. By microscopical examination acid-fast bacilli associated with cell groups were found in 21 samples. None of the 7 lightly contaminated samples was detected in this way. In 2 samples acid-fast bacilli were found unrelated to cell groups, and were given a preliminary label of saprophytes, this diagnosis being confirmed later by guinea-pig inoculation. Tubercle bacilli were never found in the complete absence of cell groups and only rarely in association with groups containing no endothelial cells. No positive results were obtained by microscopical examination which were not confirmed by biological test. It emerges that attention to the cytological picture is a most useful preliminary to the microscopical examination of samples of milk from single cows, for evidence of contamination by the tubercle bacillus increases considerably the proportion of positive results obtained. Even in its improved form, however, this method is not sufficiently sensitive to justify the omission of guinea-pig inoculation, while when bulk milk is being tested it is of very little value.

The cytological study of milk is not confined to the diagnosis of tuberculosis. Attempts have also been made to diagnose other forms of mastitis, in particular the economically important streptococcal form, by this means, but the value of the method is still in dispute. In extreme cases no difficulty arises; milk containing enormous amounts of leucocytic deposit clearly comes from an abnormal udder, whilst a sample which contains no leucocytes has probably come from a healthy udder. In intermediate cases interpretation of findings is more difficult, for it has frequently been noted that in milk from healthy udders the cell count may be high during the late colostral period and when drying off, though low at other times. It is thus necessary to have a full history of the cow from which the sample comes. Where milk from several cows has been mixed the high cell content of one fraction may be cloaked by dilution with normal milk. A differential cell count is of far greater value than a total count in judging the quality of milk. A high cell count including erythrocytes, monocytes, eosinophils, or pus cells showing phagocytosis suggests inflammatory changes, whereas desquamated epithelial cells, round cells, and neutrophils are less significant. Differential counts are, however, tedious to carry out and require considerable experience, whilst the dilution factor still comes into play.

One of the most serious defects of the cytological examination of milk as a diagnostic measure is that even where inflammatory exudate can be demonstrated, evidence is still lacking as to the cause of the inflammation, except on the comparatively rare occasions when it is possible to demonstrate the causal organism microscopically. Inflammatory exudate may be found in cases of mastitis, due to the tubercle bacillus, the streptococcus, and the staphylococcus as well as in other less important types of mastitis. Of these infections, contamination of milk by *B. tuberculosis* is of course a danger to public health. Streptococcal mastitis is of importance from the point of view of health of the consumer only in so far as such infection may affect the nutritive quality of the milk; but from the economic aspect such infection is of immense importance to agriculture. Staphylococcal mastitis is relatively unimportant economically but may have a public health significance. The significance of the mastitis in short depends on the nature of the causal organism, which for the most part can only be ascertained by resort to other methods. The microscopical examination of milk may sometimes prove a useful and a rapid aid to diagnosis, particularly in tuberculous and occasionally in other types of mastitis, but such an examination is not an adequate substitute for cultural or biological tests.

[1] The Analyst, 1931, lvi., 179.
[2] Veterinary Rec., 1932, ii., 289, and 1927, vii., 875.
[3] Jour. Path. and Bact., 1935, xli., 373.

HISTIDINE TREATMENT OF PEPTIC ULCER

THE multiplicity of the methods of treatment devised for peptic ulcer emphasises alike the incompleteness of our knowledge and the need for caution. The chronicity of the disease, and its tendency towards relapse and remission, make it an awkward subject for therapeutic investigation, and we are also handicapped by the difficulty of reproducing in animals the typical chronic ulcer found in man. Among the more interesting of the remedies now on trial is the amino-acid histidine, given by injection. The work on which its use is based begins with observations of MANN and WILLIAMSON in 1919, when they found that if the duodenal secretions of dogs are diverted into the lower end of the ileum the animals soon develop peptic ulcers like those of human beings, and severe nutritional disturbance leading to death in a few weeks. ARON of Strasbourg, repeating these experiments (with WEISS) in 1933, reported [1] that of five animals thus operated on two died with ulcers whereas the other three, which had received histidine and tryptophane injections, showed no ulceration at all. These injections were given in the belief that the development of ulcers in the dogs was in some way due to amino-acid deficiency resulting from the surgical interference with protein digestion. Further work led ARON to apply his theory to the treatment of peptic ulcer in man, and using intramuscular injections of a 4 per cent. solution of histidine hydrochloride—prepared by Messrs. Hoffmann-La Roche under the name of Larostidin—he reported very good results in 17 cases. Since this first paper by ARON and WEISS appeared in 1933 some eighty other records of the use of larostidin have been published in America, Germany, Italy, and other countries. The new form of treatment has been adopted with unusual readiness because its advocates have claimed from the first that it largely, if not wholly, takes the place of diet, alkalis, and rest in bed. Such claims demand even more careful study than those made for remedies which are merely ancillary to the better established therapeutic measures.

It will be generally admitted that, whatever the treatment, medical or surgical, the ultimate prognosis as regards cure of peptic ulcer is at present none too good. Statistics of permanent cure vary between 50 and 90 per cent., but if a long enough margin is allowed—it cannot be less than five years and should properly be much more—the final percentage is probably not above 75, and less for duodenal lesions. On the other hand, almost all forms of treatment seem capable of producing temporary improvement in almost every uncomplicated ulcer. Simple dieting may bring immediate relief; moderate or massive alkali treatment, duodenal feeding, and sometimes merely rest and freedom from worry, will often do the same. For many years, since HOLLER first recommended injections of protein in 1921, various forms of parenteral therapy have been recommended and widely used in support of dietetic or other régimes. Among them, vegetable proteins, milk, vaccines, emetine, pepsin, and many others have been given favourable reports. Indeed, it seems that non-specific protein therapy may be expected to hasten healing and lower gastric acidity, and these are grounds for using it. Histidine treatment differs from the others because it is based upon the view that peptic ulcer is at least partly a deficiency disease, and that injection of this amino-acid will correct part of the deficiency. It does not appear probable, however, that the diet of the patient, who afterwards gets an ulcer, is consistently deficient in protein—in fact many are normally big meat-eaters—and if such deficiency arises through faulty digestion or absorption of proteins no cause for the failure is yet known. The effects of drastic interference with the digestive secretions of dogs cannot be applied to man without reserve, and the rationale of histidine treatment requires further support. Judgment of its value must therefore be formed largely on clinical experience.

The dose recommended is 5 c.cm. of a 4% solution histidine hydrochloride given daily by intramuscular injection for a period up to three or four weeks and repeated as required. There are said to be no dangers, the patients need not be kept on a restricted diet, alkalis are unnecessary, and rest in bed is usually not required. Relief from symptoms follows as a rule in two to six days, and some 60–90 per cent. of cures are recorded. But as most workers point out—for example, BULMER [2] and SMITH [3] in this country and RAFSKY,[4] EADS,[5] BOGENDÖRFER,[6] and WEISS [7] abroad—it is far too early to assess the value of this treatment. Already some disappointing relapses are known and there will probably be general agreement with IZAR [8] that histidine is not a specific remedy for peptic ulcer, in the sense that it does not counteract the cause. If this is so, it must seem unwise to relax attention to dietetic and general measures while carrying out injection treatment. The longest case-histories hitherto reported are less than two years, and the word "cure" is therefore inappropriate to any of them. At the same time the many accounts of relief of symptoms, increase in weight and well-being, and removal of clinical and radiographic evidence of active ulceration point to the treatment being in some way beneficial. Whether its action will turn out to be in any sense specific or is merely (as seems likely) comparable to that of other injected substances, and whether it can lead to lasting cure or replace other therapeutic measures, are questions that can be decided only by further study. The time has not yet come for accepting an entirely new theory of ulcer-causation, and for abandoning the ordinary rules of diet and management.

[1] Aron, E.: Recherches sur l'ulcère experimental, Thèse de Strasbourg, 1933.

[2] Bulmer, E.: THE LANCET, 1934, ii., 1276.
[3] Smith, D.: Brit. Med. Jour., 1935, ii., 154.
[4] Rafsky, H. A.: Med. Rec., Sept. 18th, 1935, p. 289.
[5] Eads, J. T.: Amer. Jour. Digest. Dis. and Nutrit., 1935, ii., 426.
[6] Bogendörfer: Münch. med. Woch., 1934, lxxxi., 1270.
[7] Weiss: Schweiz. Rundschau. f. Med., 1934, No 21.
[8] Izar, G.: Policlinico, 1935, i., 2447.

THE BAR ON THE CORONER

THE General Council of the Bar would insist upon the necessity of a legal training for coroners. It also protests against the action of certain important local authorities in stipulating that the coroners whom they appoint must have a dual qualification in law and medicine. So much we learn from the annual statement of the Bar Council wherein is reported a summary of the barristers' official representations to the Home Office Committee now inquiring into the law and practice relating to coroners. The Bar does not want to see inquests abolished, but it wants them brought into line with other courts. Its demand for recognition of the right of barristers and solicitors to examine and cross-examine witnesses before coroners was inevitable. In practice this right is conceded already save in extreme cases where legal representatives get at loggerheads with their tribunal. Another by no means revolutionary recommendation is the demand that committal for trial upon coroners' inquisitions be abolished. Such committals have been greatly diminished by the 1926 Act, and they are sometimes made to look a little forlorn at the resultant prosecution. The solemn extravagance and anticlimax of Lord DE CLIFFORD'S trial in the House of Lords last December might never have been staged but for a coroner's committal. It is a question of expediency whether the rare occasions when these committals catch a criminal who would otherwise escape are sufficient justification; there are, of course, plenty of committals from other courts than the coroner's which prove abortive.

The Bar Council's demand for adherence to the strict rules of evidence is a more awkward business. A great part of the coroner's usefulness to the community is his power of sifting local gossip in cases of suspected crime. In almost every court of law some bit of technically inadmissible evidence sometimes slips in and is consciously disregarded. There seems no reason why a coroner should not be trusted to distinguish between good and bad evidence. When the police make preliminary inquiries, they are glad enough to listen to hearsay, and it may well be that those reponsible for bringing our criminals to justice will successfully object to the Bar Council's proposal. The mysteries of the strict rules of evidence—one of the causes why it is popularly believed that the truth does not always emerge in a court of law—are based on the fact that certain parties are admitted to the legal proceedings and certain issues have been carefully defined beforehand as the case which the court is to try. It is not going to be a simple matter to practise these mysteries at an inquest where it is often the coroner's task to find out what parties may be concerned and what issues may be expected to arise. Naturally the more complicated the procedure the greater the need for legal coroners and legal intervention at inquests. But if the inquest is to be converted into something like an inquiry before a stipendiary magistrate, it will cease to be the institution which has proved its usefulness by surviving through so many centuries.

Which are the better coroners, doctors or solicitors? It is doubtful whether persons who are in a position to decide the question would venture any sweeping generalisation in reply. The public, at any rate, probably detects little difference between a solicitor-coroner with a knowledge of medicine and a doctor-coroner with a knowledge of law. Best of all is the coroner who is duly qualified in both law and medicine. Yet it is this dual qualification which the Bar Council cannot abide. There is, it seems, nothing like leather.

ANNOTATIONS

PSYCHOGENIC FACTORS IN ASTHMA

Two papers in the *Guy's Hospital Reports* describe an important advance in the understanding of the asthma-eczema-prurigo syndrome. The work on which they are based was stimulated by the experience—already mentioned in reports to the Asthma Research Council [1]—that in intractable cases children sent to a convalescent home show immediate improvement and remain in good health until they return to their own homes, when they relapse at an equally striking rate. The first paper [2] shows the factors concerned in this phenomenon and tells how clinical results proved that the psychological environment of child patients is as important as the physical. Moreover, one kind of personality is predominant among this group of cases. It is noted that, for example, in a group of enuretic children one finds almost any type of personality, whereas child sufferers from the asthma-eczema-prurigo syndrome present with unusual frequency a combination of high intelligence, ready manifestation of anxiety and insecurity, and strong tendencies towards aggressiveness and egocentricity. On the parental side is found with similar frequency a nervous, over-anxious protective attitude that is plainly the cause of a part of the child's emotional state. Psychotherapy directed in accordance with these observations has been sufficiently successful for the writers to suggest that it has at least as much to offer as any other available kind of treatment for this type of asthma patient.

These results are gratifying, and the way in which the theoretical aspect of the subject is handled marks a forward step in methodology which raises the work well above the level of another addition to the numberless "cures" of asthma. The emotional determination of the asthma attack is no new discovery, but for some workers the mind-body antithesis has so great a hold that the demonstration of allergic phenomena excludes any need for psychological examination of a patient or, conversely, the curative effect of psychotherapy settles the problem of causation. Dr. Strauss [3] claims as established the point that one cannot correctly talk about "true asthma" and "psychogenic asthma," and sets out as the object of research the evaluation of the degree in which the psyche participates in the asthmas in

[1] See THE LANCET, 1934, ii., 1171.
[2] Rogerson, C. H., Hardcastle, D. H., and Duguid, K.: Guy's Hosp. Rep., 1935, lxxxv., 289.
[3] Strauss, E. B.: Ibid., p. 309.

general. References to his own experience show that asthma can be—or behave as—a symptom of conversion hysteria or an anxiety equivalent, but such cases are only on the surface of the problem. Dr. Rogerson [2] indicates its more profound difficulties when he notes the impossibility of separating the intellectual and temperamental endowment of the individual from his physical endowment, to disregard the one and call the other constitution. Apparent contradictions that have hitherto been used as arguments in controversy present themselves no longer as contradictions but as problems needing an answer. The appearance of allergic reactions in an infant of six months, for example, calls for an explanation of the curious clinical picture—a disabling physical illness from infancy which appears to respond to a modification of the psychic milieu.

This work, original as it is, does not stand alone. We have commented upon the results of the psychological examination of gastric ulcer patients by Draper and Touraine,[4] who found throughout that group peculiarities which marked them, like these asthma subjects, as possessing a specific personality picture. Similar results have been claimed in the examination of migrainous subjects, and apart from possible therapeutic applications, all these observations point to some underlying general principle the discovery of which may perhaps give a new direction to the study of physiological processes as influenced by that indefinite something that we call the psyche.

"CHRONIC CYSTIC MASTITIS"

DESPITE repeated efforts on the part of various writers to clarify the subject, by changes in nomenclature and by fresh conceptions of the underlying pathology, there still exists much confusion about that condition of the breast which used at one time to be labelled and dismissed without more ado as "chronic cystic mastitis." Two conflicting views now held by different schools of thought have never been adequately balanced—one that the disease is characterised by such an aberrant type of epithelial activity as to make carcinomatous change a dangerous possibility in every case; the other, that chronic cystic mastitis is essentially an exaggeration of a normal physiological change, and that malignancy, when it does complicate the simple disease, is as fortuitous as it is in the "normal" breast. The former view is upheld vigorously by Cheatle and Cutler [5]; the opposite opinion, at least as regards the likelihood of malignant change in the affected breast, was re-stated only recently in our columns as the experience of Mr. Eric Pearce Gould.[6] The outcome of this disagreement is that when a surgeon meets with the common type of "lumpy" breast, he is embarrassed by the knowledge that whatever line of treatment he may advise is open to serious criticism. Dr. Percy Klingenstein [7] in a recent paper draws comfort from a statement of Bloodgood's that cases of doubtful malignancy treated by radical operation have done well. Klingenstein himself does not advise such drastic measures. He quotes figures to show that conservative surgery has a definite place in the treatment of "chronic mastitis." Where some may be inclined to join issue with him is in his recognition, with Cheatle, of "mazoplasia" as a physiological state, as distinct from cysts and intracystic and intraductal papillomata, which he regards as of true neoplastic formation. J. S. Rodman [8] is much impressed with the extent of epithelial development and involution characteristic of the menstrual cycle. There does not seem to be any sound proof that the glandular menstrual changes in the breast are as profound as he believes. E. K. Dawson's [9] observations on normal breast tissue have, in fact, led her to an opposite conclusion. While the gaps in our knowledge of normal breast histology and physiology are still so wide, it is a matter of difficulty to interpret the more generalised states of epithelial change, particularly, perhaps, in patients before the menopause.

The observations of Mr. Harold Burrows [10] are suggestive. He found that in their response to œstrogenic substances, the breasts of some of his mice showed more pronounced hyperplasia and less marked cystic dilatation, while in others a pronounced dilatation was accompanied by relatively little hyperplasia, that, in fact, the two conditions seemed to occur in inverse ratio. As far as these experimental results go, they suggest that cyst formation in itself, though pathological, may be found actually to carry a more favourable prognosis than hyperplasia of the epithelium, for Burrows has found the latter condition to result from a more prolonged administration of œstrin, and to be a later effect than is cystic dilatation. It seems likely that the *localised* lesions of the breast, such as adenomata (whether of the fibro-adenoma, or the adeno-fibroma type); blue-domed cysts; papillomata; and intracanalicular fibromata, are in pathogenesis more similar to "chronic cystic mastitis" than was at one time generally thought. Encapsulation of these tumours may be very imperfect, as is well known to the surgeon who attempts their removal under local anæsthesia. A more or less generalised change in the surrounding breast tissue is not infrequent. In sections right through a breast which is the site of "chronic cystic mastitis" all the above changes—papillomata, fibrosis, cysts, and adenomata—may be found in miniature, as it were. This consideration complicates the treatment of tumours clinically localised. Rodman regards all these changes as aberrations due to interference with the proper growth and involution characteristic of the sexual cycles.

When we attempt to come to conclusions about the prognosis and treatment of this condition, we meet the further difficulty that the criteria are missing on which, in individual cases, the transition from simple to malignant hyperplasia may be decided. Also—and it should be possible in time to fill this gap in our knowledge—there is a great paucity in the literature of follow-up results of cases treated by the more conservative measures. What we want to know is whether these patients return later with cancer. Klingenstein followed 54 patients who had been treated by partial breast excision, and found that, with two exceptions, they remained free of malignancy for periods of 2–11 years. The two exceptions developed cancer of the breast, one seven years and the other one year after operation. Klingenstein quotes a report of Greenough and Simmons on 83 cases of cystic mastitis, treated by local operation, in 4·8 per cent. of which cancer later developed. Rodman follows Cheatle in accepting the incidence as being 15–20 per cent. in patients over 35. He advises watching patients over this

[4] See THE LANCET, 1934, ii., 661.
[5] Tumours of the Breast, London, 1931.
[6] THE LANCET, 1935, ii., 899.
[7] Ann. Surg., 1935, ci., 1144.
[8] Amer. Jour. Surg., 1935, xxvii., 452.
[9] Edin. Med Jour., 1934, xli., 653.
[10] Brit. Jour. Surg., July, 1935, p. 191.

age for two months. If a lump in the breast, which has been diagnosed as benign, does not in this time show evidence of disappearance, he advocates simple amputation. In patients under 35, he would watch for changes in the swelling before, during, and after the menstrual period; if there is no change he would amputate. The significance of a serohæmorrhagic discharge in these cases is considered by Klingenstein. He regards it as indicating the advent of intracystic or intraductal epithelial proliferation. Few surgeons would take the risk of not removing the breast in a case of mastitis complicated by a serous or serohæmorrhagic discharge, spontaneous or induced by gentle massage in the direction of the nipple. The great importance of sending every breast removed for pathological examination, if it were not otherwise recognised as a wise precaution, would be proved by the difficulty in recognising diffuse intraduct carcinoma. The macroscopic similarity between this admittedly rather rare condition and "cystic mastitis" has been sufficiently demonstrated.

THE BIRTH CONTROL MOVEMENT

THE National Birth Control Association, with which the Birth Control Investigation Committee is incorporated, has published this week its fifth annual report, and a history of five years of work offers to the governing body a good opportunity to summarise the past, review the present, and indicate plans for the future. When this Association started in 1930 the Ministry of Health had issued no memoranda defining the powers of local authorities in the matter of giving birth control instruction, and no local authorities had opened clinics although there were 16 voluntary bodies of this description. The staff consisted of the secretary and there were no local branches. To-day the Association has 28 local branches and the staff consists of seven, including three organisers—by no means an extravagant staff considering the amount of ground that is covered. The Ministry of Health has issued 3 memoranda, 66 municipal and 47 voluntary clinics have been established, 42 local authorities send patients to private doctors or clinics, 56 have passed favourable resolutions, while 14 have expressed themselves willing to lend or hire premises to local branches for voluntary clinics. The total expenditure, apart from research, has come to just over £6000 for five years' work.

The present situation indicates that the next five years should show an increasingly rapid development. In 1934 the circular issued by the Ministry of Health elucidated previous provisions and made it clear that the maternity and child welfare authority has the power to give advice at a gynæcological clinic to all women in need of medical counsel. The 56 local authorities mentioned above as having shown a favourable attitude towards the work must be induced to implement their goodwill; but there still remain over 250 child welfare authorities in England and Wales which have taken no action of any sort. The Association possesses evidence that organising work produces quick results, the words of the report being:

> "In many a town, an organiser who on her first visit was greeted with suspicion and apprehension so that many of those upon whom she called were afraid to discuss birth control, has at the end of a few months established a branch with a strong committee, influential supporters, and a flourishing clinic."

The public attitude to the work is shown by quotations from the reports of medical officers of health and from borough councils, one from a Welsh urban district council stating that a comparison with last year's statistics shows that the number of women attending on account of debility, due to too frequent child-bearing, has increased from 18 to 26 per cent. There is also an increase in the number of patients suffering from debility due to miscarriage or abortion.

From the investigation committee, of which Sir Humphry Rolleston is chairman and Dr. C. P. Blacker the honorary secretary, and from the medical subcommittee, of which Dr. Helena Wright is chairman, come also evidence of progress, and, as might be expected, the increased activities call for, while they justify, an increased income. The need, as stated, is remarkably modest; the Association wants, in order to pay its way and meet expansion, at least £1800 per annum, but possesses an income of £1000 only. Its call for further support is amply justified, and the latest record of work done should lead to the necessary increase of members. Subscriptions and donations should be sent to the hon. treasurer, National Birth Control Association, 26, Eccleston-street, London, S.W. 1. The annual subscription of members is £1 1s.

A BIOLOGICAL ASSAY OF LIVER EXTRACTS

MANY attempts have been made to devise a method for biological assay of liver preparations. None has hitherto proved of practical use. It has hitherto been essential to test all material of unknown potency upon patients with Addisonian pernicious anæmia. Such patients should have a red cell count below 2,000,000 per c.mm., and no complicating factors such as sepsis present. Recently however, two promising lines of attack on the problem have been proposed. Miller and Rhoads[1] by feeding swine with a modified form of the diet which produces black tongue in dogs have produced a symptom-complex, not unlike that of pernicious anæmia, which is relieved by the administration of potent liver extracts. These observations suggest that in the future such anæmic swine may be used as test animals. Landsberg and Thompson[2] and Jacobson[3] working independently have shown that the guinea-pig reacts to the administration of potent liver preparations by a reticulocytosis. Jacobson employed adult male pigs weighing between 300–800 g. and kept on a diet of oats, carrots, and lettuce. He found that 30–70 per cent. of the animals showed a significant rise in the number of reticulocytes following parenteral injection of active liver preparations when first given. The uninjected guinea-pigs offer no clue that might seem to differentiate between the two classes of guinea-pigs—i.e., those that will react and those that will not. Further tests of initially non-reactive animals may show them later to have become reactive. Conditions in the guinea-pig necessary for a reaction to occur are not yet clear. Using known reactive animals, it has been possible to show that for every active material there exists a minimal effective dose which is termed the guinea-pig unit of hæmopoietic activity and which is a quantitative expression of the degree of activity. It would appear justifiable to conclude that the capacity to induce a reticulocytosis is confined to materials effective in pernicious anæmia, since, when an assay on guinea-pigs of crude extract from human livers was made, a control healthy human

[1] Miller, D. K., and Rhoads, C. P.: Jour. Clin. Invest., 1935, xiv., 153.
[2] Landsberg, J. W., and Thompson, M. R.: Jour. Amer. Pharm. Assoc., 1934, xxiii., 964.
[3] Jacobson, B. M.: Jour. Clin. Invest., 1935, xiv., 665 and 679.

liver gave a value of 127,000 guinea-pig units, while that of a case of pernicious anæmia in partial remission had a value of 47,000, and that of two cases in relapse had a value of only 650 and 380 guinea-pig units. The material in liver, therefore, which is reticulocytogenic in the guinea-pig is at least closely related to the material effective in pernicious anæmia. The administration of the extrinsic factor of Castle alone to guinea-pigs was ineffective, but extrinsic factor predigested with gastric juice was reticulocytogenic. Comparative studies of potency of certain materials carried out on guinea-pigs and patients gave results which agreed in a satisfactory manner. The rise in reticulocytes considered positive by Jacobson is slight, but from considerable experience he claims that provided a rigorous technique is employed the results obtained are significant and he concludes that regardless of the obscurity of the basis of the phenomenon the guinea-pig test is a valid indicator of the therapeutic efficiency of materials effective in pernicious anæmia.

THE CANADIAN MEDICAL ASSOCIATION [1]

THAT the history of medicine is, speaking in general terms, a history of civilisation, is becoming more obvious as more historical reading is placed before us. For numerous books which have been published during the last 20 years tell the story of medical improvements and developments as they are contemporary with the evolution of general politics. The fact that throughout the most troublous times in the story of nations medicine has gone steadily on its way, while dominions and powers disappear or are modified out of their original schemes, contrasts the record of medicine as a continuous one with general history which has been subjected to countless breaks and setbacks. One great example only of this steady progress will suffice—it stares us in the face. The recent European war has seen a complete dissolution of many political systems, while the science of medicine has not only maintained its progress but has benefited in obvious directions by the opportunities given for new work to meet new circumstances. Dr. MacDermot in telling the story of the Canadian Medical Association shows very well that when once the idea of coöperative action has been perceived, the medical spirit will lead to organised action, and that the results of that action will be for the public good, whatever troubles general society as a whole may be going through. The Canadian Medical Association grew from small beginnings and for many years its position was quite precarious. Attempts to organise medicine in Canada were made at least 90 years ago, but for the first 50 years they were abortive, or only useful in affording experience to others who were resolved to carry on the work. At the end of the last century, however, and indeed up to the breaking out of the European war, the Association became representative of the Canadian profession, established a relationship with local and provincial medical societies, and issued a journal which promised to be well established. Then came the war when the systematic work of the Association was sharply curtailed, for its individual members were mostly involved in military duties and a mere skeleton of the organisation remained. It was contrived, however, to keep the journal alive, and three years after the war a strong committee restored the Association to a stable position, so that to-day, while looking back upon an honourable past a useful future is open to it. Dr. MacDermot supplies an interesting chapter in medical history.

[1] History of the Canadian Medical Association, 1867–1921. By H. E. MacDermot, M.D., F.R.C.S. (C.). Toronto: Murray Printing Co., Ltd. 1935. Pp. 209.

HIGH PROTEIN DIETS IN ALBUMINURIA OF PREGNANCY

To the devising of diets for the toxæmias of pregnancy there is no end, nor is there likely to be as long as the ætiology of these disorders remains obscure. But while most of the régimes which have been proposed have enjoyed only transient or local vogue, there is a fairly widespread and persistent impression that protein is bad for the potential eclamptic. How this impression has gained credence is not clear, for the idea of eclampsia as a result of rotting of flesh food in an obstructed bowel seems to depend more on vegetarian superstition than on scientific fact. Nevertheless, the superstition dies hard and there is little doubt that protein restriction is widely practised, not only in toxæmia but also in normal pregnancy. There is no convincing evidence that the practice does good, but is it certain that protein restriction is not harmful in pregnancy? After all the full-term uterus and its contents represent a considerable mass of protein which must come either from the mother's diet or from the protein reserves of her own muscles. A recent paper by M. B. Strauss [1] has some bearing on these reflections, for he reports that the protein content of the diet and also the concentration of protein in the blood plasma is consistently lower than normal in cases of pre-eclamptic toxæmia. Moreover, he found that when he treated such patients with diets poor in protein the œdema and albuminuria were aggravated; whereas a high protein diet led to a reduction of the œdema and improvement of the toxæmic symptoms. The significance of these observations is not, as yet, clear, for the improvement in the latter group may have been partly due to simultaneous administration of vitamin B. The number of cases so far treated has also been small and it is well known that simple rest in bed will often cause considerable improvement. It would certainly be unwise to infer that protein starvation is an important cause of toxæmia, for it must be remembered that the incidence of eclampsia was abnormally low in the starving central European countries during the last war. The problem goes deeper than that; but Strauss's paper should at least prompt the obstetrician to ask himself whether he is justified in depriving the pregnant woman of protein.

SYMPATHECTOMY FOR DYSMENORRHŒA

THE cause of primary dysmenorrhœa has never been ascertained. On the assumption that it may arise from some disturbance or imbalance of the sympathetic innervation of the uterus, interruption of the sympathetic supply has of recent years been advocated and practised with considerable success. Of the several methods which have been devised that of Cotte (resection of the superior hypogastric plexus) seems to be the most satisfactory. V. S. Counseller and W. McK. Craig [2] have reported 14 cases from the Mayo Clinic, of which it is stated that 9 obtained 100 per cent., 2 obtained 95 per cent., and 3 obtained 75 per cent. relief; there were no deaths and no serious complications. A discussion held by the section of obstetrics and gynæcology of the Royal Society of Medicine [3] two years ago

[1] Amer. Jour. Med. Sci., December, 1935, p. 811.
[2] Amer. Jour. Obst. and Gyn., 1934, xxviii., 161.
[3] Proc. Roy. Soc. Med., 1934, xxvii., 258.

produced a number of case-reports by different surgeons: Mr. A. A. Davis gave his percentage of one-year cures as 50; Mr. Malcolm Donaldson reported 16 cases, of which only 1 failed to obtain relief; of 8 cases reported by Mr. Sidney Forsdike 2 were completely, and 5 partially, relieved, while 1 derived no benefit at all. The last-named speaker emphasised the necessity for care in the selection of cases for operation, pointing out that the comparative ease and safety of the procedure renders it liable to abuse. F. S. Wetherell,[4] who has had several successful cases, also utters a warning against too ready resort to what is in effect a major abdominal operation accompanied by distinct risks. F. E. Keene [5] lays stress on the occasional anatomical difficulties and added dangers; the inferior mesenteric vessels, for example, may be situated further to the right than is usual, so that dissection of the nerve plexus from beneath them may be very difficult and fraught with danger to the vessels.

In a paper which we publish this week, Mr. Davis describes 6 cases treated by alcohol injection of the pelvic plexuses in the neighbourhood of the uterus. This method, first used by Blos, has the great advantage over sympathectomy that it is a comparatively minor procedure and does not carry the risks inseparable from laparotomy. The chief drawback seems to be that it does not allow of possible gynæcological lesions being discovered and treated, and these cannot always be excluded, especially in stout women, without operation.

URETERO-INTESTINAL ANASTOMOSIS

A CONDITION which calls for uretero-intestinal implantation is serious enough, without the added inconvenience to the patient resulting from leakage or an ascending infection. Every method so far devised of forming a uretero-intestinal anastomosis has its inherent disadvantages and none is suitable for every case. Some of the methods advocated have resulted in a high percentage of failures, no matter how skilfully the operation has been performed. Others, whilst theoretically sound, are attended by such technical difficulties that only a surgeon with a large experience of this type of work can overcome them. In the December number of *Surgery, Gynecology, and Obstetrics* Dr. Frank Hinman describes a method of implantation in many ways simpler than those advocated by Coffey and no more liable to subject the patient to the risk of complications such as ascending pyelonephritis, compression of the ureters, or leakage of urine or fæcal material at the site of implantation. Hinman's method also has the advantage of allowing both ureters to be transplanted simultaneously; it dispenses with the use of ureteric catheters or fine rubber tubes. Preoperative treatment involves a non-residue diet for at least three days and the clearing of the bowel by castor oil and repeated enemata as well as the use of urinary antiseptics.

The operation consists essentially in the formation of peritoneal flaps and the isolation of the ureters. The peritoneum is slit alongside that portion of the pelvic colon into which the ureter is to be implanted. The outer flap of peritoneum is then stripped up, the ureter found, and held by passing under it a rubber tape. By traction on this tape, the juxta-vesical portion of the ureter is made visible under the peritoneum and a small incision allows it to be reached and divided between ligatures close to the bladder. Convenient sites for implantation are then selected, preferably not at the same level and marked on the bowel by stay sutures at either end of the imaginary incision. The ureters are then implanted with seven sutures. The method of doing this is to make a clean cut from 2·5 to 3 cm. long in line with the stay sutures, over the muscular coats which are teased back to expose the surface of the mucosa. The sutures are inserted by means of an atraumatic needle passed through the submucosa of the bowel, and through the adventitia of the outer side of the ureter avoiding both lumina. Dr. Hinman gives explicit details, clearly illustrated, concerning the method of inserting these sutures so as to avoid constricting the ureter, and to ensure a good fit. Flaps of peritoneum are then adjusted so as to cover the lines of sutures, care being taken that neither bowel nor ureter is pulled out of line by these flaps, and the abdomen is closed in layers without drainage.

Dr. Hinman reports that 12 patients have undergone simultaneous bilateral implantation by this method; 5 have died, but only 1 of these deaths is directly the result of the operation (bronchopneumonia). Three of the deaths followed an attempt to remove radically at a second operation the bladder, prostate, and vesicles for carcinoma. In none of the 12 patients was there any urinary or fæcal leakage at the site of implantation.

[4] Amer. Jour. Obst. and Gyn., March, 1935, p. 334.
[5] Ibid., October, 1935, p. 534.

ASCHOFF'S SEVENTIETH BIRTHDAY

SOME eighteen months ago British pathologists took the opportunity of his seventieth birthday to pay a tribute to the doyen of their science in this country, Sir Robert Muir. To-day, Jan. 10th, they join with their German colleagues in celebrating the seventieth birthday of Prof. Ludwig Aschoff. For the last 30 years his institute at Freiburg has been the mecca of young men from all countries who have sought inspiration and guidance in methods of pathological research; and none has come away empty-handed. Aschoff's last visit to England was in the summer of 1932, on the occasion of the centenary meeting of the B.M.A. The section of pathology was being addressed by one of his former disciples when the door opened to admit a late-comer whose agitated progress to a seat was somewhat impeded by an overcoat, suitcase, and umbrella. A gleam of delighted recognition was followed by an exchange of solemn bows before the discourse was resumed. On the next day the visitor himself delivered a remarkable address, and was subsequently entertained to lunch by a joyous assemblage of friends and admirers of all ages. Aschoff is a great master of morbid anatomy; there is scarcely a branch of the subject which he has not illumined by his knowledge and enthusiasm. At the age of 70 he retains that living interest in pathology which has proved a stimulus to generations of his students. To hear Aschoff lecture, to see that frail form quivering with the eagerness of exposition, is an experience never to be forgotten. One is reminded of a racing speed-boat, throbbing with the power that shakes the whole craft into impetuous motion. Such men have little to fear from the encroachment of the years.

Mr. F. D. Donovan, surgeon-dentist to H.M. Household, was created a Commander of the Royal Victorian Order in the New Year honours list.

THE tenth British Congress of Obstetrics and Gynæcology will be held at Belfast from April 1st to 3rd under the presidency of Prof. R. J. Johnstone. Details are given on p. 124.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXXIV.
PROGNOSIS IN CHRONIC BRONCHITIS AND EMPHYSEMA

IN chronic and slowly progressive conditions prognosis is often as much concerned with the outlook in regard to economic capacity and outdoor activities as with the probable length of life. This is particularly true in patients suffering from chronic and recurrent infections of the air-passages and in those with emphysema, the more so since the patients are usually in the middle and later periods of life when business and family responsibilities are serious. In these conditions prognosis is therefore an important practical problem and demands most careful consideration of a number of factors, to each of which due weight must be given. It is convenient here to consider and discuss these in a definite order, such as would be adopted in the assessment of a particular case.

Family history.—There can be little doubt that a tendency to emphysema may be inherited. It is sometimes found comparatively early in life in the absence of any cause of chronic expiratory stress. In such cases a family history, in parents or collaterals, of chronic bronchial conditions and of early death from respiratory diseases or cardiac failure may be of significance. Cohnheim went so far as to suggest a congenital defect in the elastic tissue of the lung as a factor in the genesis of emphysema. Osler, writing of arterio-sclerosis, referred to "vital rubber," and suggested that in early family incidence of that condition, it could not be explained "in any other way than that in the make-up of the machine bad material was used for the tubing." It is also generally recognised that elastic tissues tend to deteriorate with advancing years.

Personal history may be of the greatest significance in prognosis. The age at which the yearly winter cough started, the number of years during which it has occurred, and the length of the summer intermission, are all of importance. It is usually found that this intermission becomes progressively shorter and its reduction in length is in some degree a measure of the progress of the condition, and therefore of prognosis. In this connexion Kingston Fowler pointed out that the abrupt cessation of the summer intermission, in other words, the persistence of the cough through the summer months in cases where there had previously been some weeks or months of freedom, should always arouse a suspicion of the presence of tuberculosis, and this I have often verified. Since emphysema tends to mask the signs of early tuberculosis this is an important observation, and indeed in the past many cases of tuberculosis in elderly people have masqueraded as chronic bronchitis and emphysema, and have been responsible for widespread family infection. The recognition of its presence may lead to a more serious prognosis in such patients than the previous history would suggest.

Respiratory diseases in early life leading to chronic cough or to fibrosis with bronchial dilatation, either fusiform or saccular, are important factors in leading to chronic expiratory strain and thus inducing widespread emphysema. They certainly must be considered as unfavourably influencing the prognosis in regard to the full expectation of life and in regard to full economic activity in middle life. In the future it is to be hoped that more attention may be given to convalescence after such conditions, and to special measures such as breathing exercises to obviate or mitigate their after-effects.

Long-continued asthma, especially when associated with bronchial infections, leads to increasing emphysema, and therefore may influence prognosis unfavourably, though spasmodic or allergic asthma, being often intermittent, is less serious in this regard. Coexisting renal or cardiac disease and conditions such as diabetes, obviously tend to render prognosis more serious.

Occupation, habits, and habitation.—Occupations involving exposure to inclement weather, to dust, and to risks of infection are unfavourable, as also are those involving heavy muscular strain or prolonged exertion. Blowing wind instruments has long had a bad reputation in this regard, but it may be questioned if it is altogether deserved, especially if adequate training in breathing and blowing has been given.

Habits are also of some significance in prognosis. Over-smoking, especially the inhaling of cigarette smoke, tends to produce chronic cough and hawking, and patients should be warned of its ill-effects. Alcoholic over-indulgence is also unfavourable by promoting infection, and leading to earlier cardiac breakdown. Habitation is also of great importance, particularly at times other than the summer. Patients with chronic bronchitis and advancing emphysema are most comfortable in dry, warm climates, especially in places where high atmospheric pressures are common. Cold, damp localities are unfavourable, and predispose to further catarrhal manifestations. High altitudes and rarefied atmospheres tend to induce dyspnœa in advanced cases and are contra-indicated.

Social state is a factor of great importance in prognosis. Those in comfortable or affluent circumstances can avoid unfavourable winter conditions by migrating to sheltered areas in this country, such as the south and west coasts of England, and certain parts of the Welsh coast, or to resorts in Egypt, North Africa, the Mediterranean, the West Indies, California, South Africa, or the antipodes. Even those less favourably circumstanced may do much to protect themselves by remaining indoors in damp, foggy, and windy weather, though in older people this may involve weeks or even months without outdoor exercise. Such precautions are clearly impossible for the vast majority of those, both men and women, who have to earn their living by work away from home. In the large industrial towns in this country the daily journey to and from work, with the incidental risks of exposure, infection, chill, and wetting, gravely affects the prognosis in workers who develop chronic bronchitis and emphysema, and the problems offered to medical men in treating and advising precautions in these conditions are difficult in the extreme from the absolute inability of many such patients to follow the advice given.

Symptoms and physical signs.—Symptoms often afford valuable information in regard to prognosis, particularly cyanosis, dyspnœa, and cough. Cyanosis is to some extent a measure of the degree of emphysema and of the extent of the stress on the right

heart resulting from it, though it is in part due to the incomplete oxygen saturation of the blood and the resultant polycythæmia. It should, however, be remembered that patients with this condition may show an extreme degree of cyanosis and yet be able to walk about and work. When the cyanosis is associated with secondary heart failure and œdema its prognostic significance becomes greater and more serious.

Dyspnœa apart from intercurrent acute bronchitis is a serious indication and suggests advanced emphysema or increasing circulatory failure. This may be evidenced not only by effort but also by the number of pillows used by the patient at night. Spasmodic dyspnœa of asthmatic type is common and is often induced or aggravated by intercurrent acute or subacute bronchial infections. Its prognostic significance is difficult to determine. If it is long continued, it is of serious import, both by increasing the emphysema and by promoting circulatory stress.

Cough is often troublesome and serious for similar reasons. It may also cause disturbed nights and so react unfavourably. It sometimes happens that a violent paroxysmal cough develops in which the patient becomes deeply cyanosed, and may even become momentarily unconscious. This is usually an unfavourable prognostic indication. Expectoration varies from little or none to copious amounts of frothy fluid or of tenacious muco-pus. In the latter case it suggests some degree of bronchial dilatation and is an unfavourable sign. Hæmoptysis is rare and should excite suspicion of latent tuberculosis, or "silent" bronchiectasis.

The physical signs are perhaps less significant in regard to prognosis than the symptoms; indeed, Cabot has raised a doubt as to the characteristic barrel-shaped chest being diagnostic of, or the result of emphysema. In any case, the rigid chest of this type in pronounced degree, associated with marked extension of the resonance or hyper-resonance beyond normal limits, obliterating or diminishing the areas of cardiac and liver dullness, connotes considerable diminution of respiratory efficiency, but is less significant in relation to prognosis than signs of right ventricle engorgement or failure. Evidence of tricuspid regurgitation is usually a serious portent. Persistent rhonchi, especially of the sibilant type, particularly when associated with constant bubbling râles at the bases of the lungs, are unfavourable, indicating chronic inflammation of the smaller tubes. Fine râles on deep inspiration heard near the sternum or in the axillæ are frequent in mild cases and of less significance.

Small-lunged emphysema is usually a senile, atrophic, or degenerative process and is associated with less dramatic symptoms until cardiac failure supervenes.

X ray appearances in large lunged cases are somewhat characteristic, showing the increased extent and trans-radiancy of the lung tissues as well as the degree of cardiac enlargement, and these may give some indication of the degree of the condition.

Special tests.—Estimations of the vital capacity may give useful information. This may be very considerably reduced, and a diminution approaching half of the normal should be regarded as serious. Other tests, such as the manometer test, Flack's endurance test, and those devised by Moncrieff are not yet in general use, but can be employed in special cases. Effort response tests and electrocardiographic investigation may also give useful indications, especially in regard to the degree of circulatory impairment resulting.

Complications and intercurrent diseases.—Chronic renal disease, organic heart disease, raised blood pressure, diabetes, asthma, and pulmonary tuberculosis all affect prognosis in chronic bronchitis and emphysema adversely, while the risks of intercurrent febrile conditions such as influenza or pneumonia are gravely increased.

Treatment.—The results of treatment, especially that designed to prophylaxis of bronchial infections, are of great importance in regard to prognosis. Inoculations with vaccines, either autogenous or stock, may in some cases help greatly in mitigating or even preventing the winter cough. Even one free winter secured by this means or by an escape to more favourable conditions for the winter months in some resorts like those already mentioned may serve to arrest or to delay the advance of the emphysema. Treatment by compressed air baths at a pressure of 1⅔ atmospheres is often helpful, especially in cases complicated by bronchial asthma. The special respiratory treatments afforded at certain spas, notably La Bourboule, Mont Dore, Reichenhall, and Ems, can also be helpful in lessening the catarrh of the air-passages, relieving asthmatic spasm, and possibly in increasing resistance to infection. It is to be hoped that in the future similar methods may be tried systematically at some of the British spas.

SUMMARY

Chronic bronchitis and emphysema are not in themselves fatal conditions, or indeed even direct causes of death, though they may, either alone or in association, be the means of shortening life, by leading to earlier respiratory and cardiac breakdown, or by rendering more grave the struggle in serious intercurrent disease such as influenza, pneumonia, or pleurisy.

It is difficult to assess the prospects of a particular patient on the lines of the numerical method now used in life assurance offices, especially in America. In this method, numerical debits are given for unfavourable factors such as heredity, unsuitable occupation, bad habits, and progressive physical signs, while credits are given for favourable indications such as social state, comfortable conditions of life, and habitat. A careful assessment on these lines of all the factors considered above might enable some useful conclusions to be formed in a particular case. In general terms, a young patient with hereditary tendencies and with a personal history of respiratory disease early in life leaving persistent lesions and signs is likely to be economically damaged in or before the fourth decade of life, more especially if the conditions of living and work are bad. Such a patient would certainly be rated up for life assurance either by the addition of several years to the age or by the limitation of the assurance to an endowment at 50 years of age, and even then probably with an extra. On the other hand, a patient who does not develop bronchitic tendencies until the middle or late forties, who is comfortably circumstanced, whose work does not involve exposure or unfavourable conditions, and whose symptoms and physical signs are only slowly progressive, may well live nearly the normal span and be enabled to work to the age of 60 or after; but even such a case would probably be rated up for life assurance.

R. A. YOUNG, M.D., F.R.C.P. Lond.,
Senior Physician, Middlesex Hospital; Consulting Physician, Hospital for Consumption, Brompton.

SPECIAL ARTICLES

THE CONTROL OF MEASLES *

By J. A. H. Brincker, M.B. Camb., D.P.H., F.I.C.
A PRINCIPAL MEDICAL OFFICER OF THE PUBLIC HEALTH DEPARTMENT, LONDON COUNTY COUNCIL

Measles has no doubt been with us always. It is a disease usually affecting children and occurring in London in epidemic form biennially from autumn to spring, though it has been known to appear epidemically in hot months and to affect adults severely. In temperate climates and in city populations it reappears with almost clock-like regularity biennially at the end of October. It crops up in one or more separate places and gathers momentum until it reaches epidemic proportions in January and February, after which it subsides. By the end of June it has more or less disappeared, not to reappear in epidemic form until the following October twelvemonth.

EPIDEMIOLOGICAL FEATURES

Measles is a disease which fulfils with remarkable accuracy the conditions of an epidemic cycle (Fig. 1); its waves of prevalence, with their respective rises and falls, are interspersed with periods of absence. A disease affecting a large human community, it has interested many epidemiologists, for it provides admirable material for the detailed study of an epidemic. In London it began to assume special prominence in 1900, and a medical officer was appointed to deal with the health of the London school population. The picture it presented at that time was of a severe epidemic descending on a large school population, affecting within six months some 35,000 to 40,000 children, killing a large proportion of them and maiming more, causing the absence from school of those affected and of their brothers and sisters, necessitating frequent school closure for indefinite periods during the epidemic and paralysing the educational machinery. At that time little was known about the behaviour of epidemics generally and the precautions to be taken to deal with them. Such measures as were adopted were invariably of a panic nature and were always undertaken too late; it was the usual tale of closing the stable door after the horse was out. It was not even suspected that the elder children, infected in school, were, on the closing of the schools, being sent home to infect their younger brothers and sisters who were not attending school. It was assumed that all children would sooner or later contract the disease and that they would have to take their chance of recovery or death. Treatment of patients by attention to general hygiene methods and by the provision of home nursing, or removing them to hospital to prevent complications, was not thought of and children affected were only admitted to the wards of poor-law hospitals when they were dangerously ill.

The study of the epidemiology of measles in London commenced, then, in 1900, chiefly with the observation of school-children and the keeping of statistical records relating to schools. The chief aim in dealing with an epidemic was to stop it or at any rate slow it down. Various measures were adopted with this end in view, such as complete closure of schools, closure of infant departments or of classes in infant departments attended by the younger children, and exclusion of children who had not previously suffered from the disease, either for the whole period of the epidemic or for the period during which they would be likely to contract the disease—i.e., from the ninth to the sixteenth day after exposure. Complicated rules were drawn up and were faithfully carried out by school teachers, school nurses, and attendance officers, and much praise is due to them for their coöperation in the attempts made to deal with these epidemics.

These precautions, with variations, were carried out during every succeeding epidemic, but they proved futile and were finally given up in 1918. Though these experiments were a failure so far as controlling the spread of the disease was concerned they taught us many things about the behaviour of an epidemic of measles which are now generally accepted. For instance, in addition to those characteristics already mentioned, it was observed that:—

Epidemic Cycle of Measles

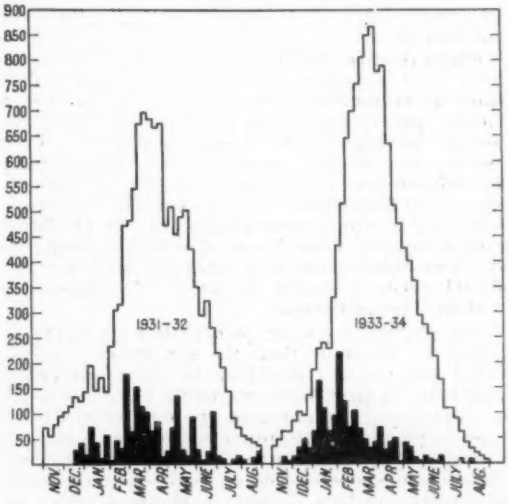

FIG. 1.—Chart showing the number of admissions for measles to L.C.C. fever hospitals (plain area) and inoculations of adult serum (black area) for each week from Nov. 1st to August 31st during the epidemic periods 1931–32 and 1933–34.

1. A measles epidemic did not arise in a community of children until the susceptibles rose to 25 per cent. and the epidemic did not stop until this susceptible population was reduced to under 20 per cent.

2. Epidemics when they started did not flare up at once, but required both time, inflammable material, and the right weather conditions to gather momentum.

3. In London, at any rate, measles was a disease affecting children under 7 years of age, and therefore boys and girls in the upper classes of schools were of no account in the spread of the disease.

4. Contacts only became active in spreading the disease from the time the coryzal symptoms developed and the risk of transmitting infection diminished rapidly after the disappearance of the rash; in fact, the greatest risk of communicating infection occurred in the pre-eruptive stage, from the ninth to the twelfth day of incubation.

5. The disease itself did not kill, but predisposed the patient to the great risk of secondary infection by hæmolytic streptococci (resulting in deadly complications such as broncho-pneumonia) and to others such as otitis media and ophthalmia, which, while not so deadly in themselves, could give rise to life-long disability.

* A paper read to the Hunterian Society on Dec. 16th, 1935.

6. The most susceptible age, both for measles and complications, was the pre-school age and by far the greatest number of deaths occurred in the second and third years of life.

P. Stocks later pointed out that the old belief that all children were bound to suffer from measles was not correct.[1] For every 100 children suffering from a clinical attack of measles in a densely populated area about 300 others become temporarily immunised, presumably by subliminal doses of the virus, but of these 300 some 250 lose their immunity again before the next epidemic. It is these children who have lost their immunity, together with those born subsequent to the epidemic, who make up the vulnerable population ready to start the next epidemic.

FAILURE OF QUARANTINE

By 1918 sufficient knowledge had accumulated to demonstrate the necessity of attacking measles by other means. First and foremost it was clear that quarantine, on which so much faith had been placed in the past, and which had been found wanting, was based on erroneous ideas. It was therefore necessary to abandon it finally and completely. As already stated, it was established that measles was particularly dangerous to the pre-school child and the success which attended the experiment of dealing with cases at home on open-air lines and by hygienic methods showed the need for home nursing and medical assistance. These were provided by empowering the borough medical officer of health to call in such aid. By the Maternity and Child Welfare Act of 1918 local health authorities were not only able to provide medical and nursing aid, but also, through the establishment of child welfare clinics, to educate the mother in matters of health and hygiene. In 1910 measles began to be admitted to the fever hospitals of the late Metropolitan Asylums Board. After a conference held in 1926 between representatives of the Board, the Ministry of Health, of the London County Council, and of the borough medical officers of health, it was decided to admit measles to the wards of the fever hospitals pari passu with scarlet fever, the criteria for admission being the type of home and the facilities therein for the proper care of the patient, rather than type of case. To these criteria was subsequently added the age of the patients, in view of the high mortality amongst children under the age of 2. At each of the subsequent epidemics of measles more and more cases were admitted to the fever hospitals (Fig. 2). In the 1931–32 epidemic 11,368 cases were admitted during the 10 epidemic months and in the 1933–34 epidemic 10 months 12,730 cases, selected in this way, were treated in the wards of the L.C.C. hospitals. By this means many lives were saved, as the case-mortality demonstrates, for of admitted cases in successive epidemics this was 7, 6·5, 5·3, and 5·1 per cent. respectively. It may be of interest to note that patients are treated to a considerable extent in open wards and that under such conditions even cases of severe broncho-pneumonia, otherwise considered hopeless, are nursed back to health.

Increasing Hospitalisation of Measles in London

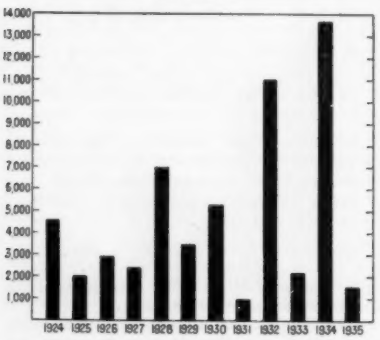

FIG. 2.—Chart showing the total admissions for measles to London fever hospitals (M.A.B. and L.C.C.) from 1924 to the present time.

It is obvious that hospitalisation provides for large numbers of children treatment such as it would be impossible for them to receive at home. In addition to being skilfully nursed in bed in well-ventilated wards with plenty of fresh air, and provided with suitable diet and medical treatment, many accessory lines of treatment are available. Thus many patients are now treated with antistreptococcal serum in the hope of preventing complications. The oxygen tent has been found of great value in dealing with broncho-pneumonia and, in cases of empyema, success has attended the use of the Drinker apparatus to prevent permanent collapse and fibrotic changes in the lung. Skiagrams are now considered necessary for the treatment of the after-effects of measles.

SERUM PROPHYLAXIS

Once measles has been contracted serum is of no use; the aim is either to prevent or to attenuate the disease in those exposed to it. It must therefore be used during the period of incubation. The first attempt to modify measles was made by L. Weissbecker 40 years ago. He employed convalescent measles serum in the early stages of the disease. The first published report on the procedure was made by Nicolle and Conseil in 1918. Since then Degkwitz (1920) and other workers have used convalescent serum to modify the disease. Until the 1929–30 epidemic in London little or no attempt had been made to control the disease by the prophylactic use of immune sera. It is true that in America and Germany attempts had been made to procure immune sera from animals, but all these proved valueless or unreliable and their use was ultimately abandoned. Among such sera were those prepared by Tunnicliff, Ferry and Fisher and Degkwitz. Before the 1929 experiments a few pioneers were at work, the most conspicuous among them being Dr. E. H. R. Harries, then in Birmingham, Dr. D. N. Nabarro at Great Ormond-street Hospital, and Dr. W. Gunn at the Park Hospital. They used serum prepared from the blood of persons who had recently recovered from an attack of measles. During the 1929–30 epidemic in London, however, convalescent measles serum obtained from the blood of such persons was tried on a large scale. This serum proved very efficacious both in preventing an attack and in attenuating the disease. Whether the one or the other was attained depended on the dose of serum given and the time at which it was administered. The varying effect of dosage and the day of injection was very carefully observed and from the experience thus gained any desired result could be attained. Convalescent measles serum thus proved of great value, particularly in preventing children already seriously ill with some other complaint or those about to undergo an operation from contracting the disease after a known exposure. Its use also obviated the need of placing a children's ward in quarantine on the occurrence therein of a case of measles.

Unfortunately most of the patients suffering from

[1] THE LANCET, 1930, i., 796.

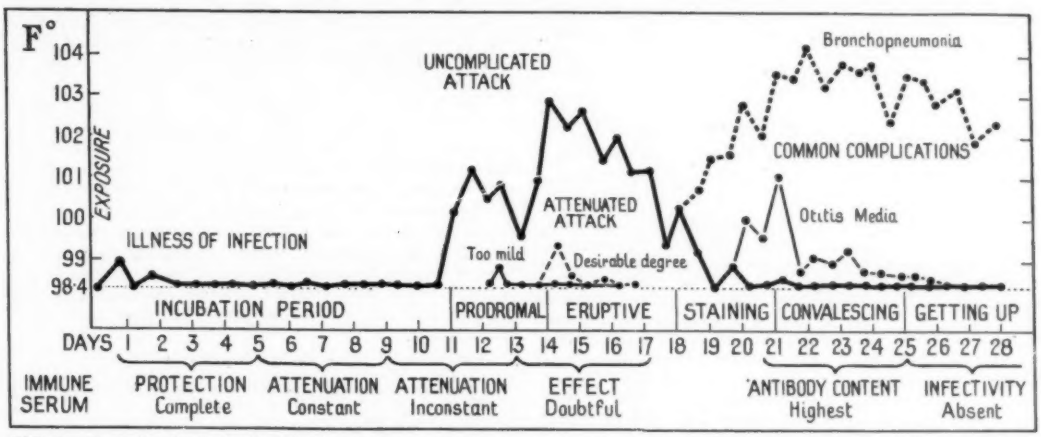

FIG. 3.—Synoptic chart showing the typical course of measles: (1) uncomplicated, (2) with the two commonest complications, (3) attenuated by immune serum (*a*) to the desirable degree and (*b*) to an undesirable degree with an attack too mild to confer lasting immunity. The dosage of serum and the time-table of its administration are as follows:—

Nature of serum.	Dose in c.cm.	Dosage factor.	Route.	Prophylaxis.		Treatment.
				Protection.	Attenuation.	
Convalescent ..	5–20.	Age × 2.	Intramuscular.	1st–5th day.	5th–9th day.	Within 6 days of onset. Dosage factor: age × 4. Route: intravenous.
Normal adult ..	10–40.	Age × 4.	Intramuscular.	1st–3rd day.	3rd–9th day.	
Whole blood ..	Double its serum.	Age × 4.	Intramuscular.	1st–3rd day.	3rd–9th day.	

measles are very young children from whom blood cannot well be abstracted and the number of adults suffering from the disease is so small that the amount of convalescent measles serum available in any epidemic must be very limited. Moreover, to be of value an immune serum should be available at the commencement of an epidemic and not towards its end. Chiefly for these reasons other sources of antibodies had to be sought. It is well known that an attack of measles produces a permanent immunity and that, in London at any rate, most adults have either suffered from measles in childhood or are immune. It was, therefore, suggested that serum obtained from young healthy adults might have some immunising property. To determine if this were so serum was obtained from healthy adults who had volunteered to give it and tested in the same way as convalescent measles serum. This serum is referred to as adult measles serum to distinguish it from the convalescent measles serum obtained from those recently recovered from measles.

I will now summarise the experience which followed the use of this serum culled from an account of the 1931–32 London epidemic. The type of children in whom complete protection is advisable are those who are weakly or debilitated; those suffering from any serious intercurrent disease, infectious or otherwise; and all children under 3 years of age, whatever their condition. For these a minimum dose of 10 c.cm. adult measles serum is recommended. From the age of 3 years onwards the dose is reckoned in cubic centimetres by multiplying the age in years by four. To ensure protection, the serum should be administered within five days of the earliest known exposure to infection; the earlier the injection is made, the more likely is complete protection to follow. The injections should be given intramuscularly, preferably into the vastus externus. The duration of the immunity conferred is roughly three to four weeks.

After the age of 3 years, provided that the physical state is satisfactory, it is desirable to aim not at complete protection but at a modification of the attack of measles if circumstances permit. This is achieved by injecting the serum, in the doses already recommended, later in the incubation period—viz., from the sixth to the ninth day after exposure. The same results may be attained, with resulting economy in serum, by halving the dose and giving the injection within the first five days. The immunity which follows a modified attack appears to be permanent. Of course, if the patient has had measles previously the administration of serum is unnecessary and in fact wasteful.

The statistical analysis of the clinical data in the 1931–32 epidemic makes interesting reading. I will assume that if a susceptible child exposed to measles is given intramuscularly a sufficient dose of this serum within five days of exposure he will be protected, and that, if the same dose is given between the sixth and ninth day of exposure, or half the usual dose within the first five days, the child will suffer from a modified attack of the disease. From the data available it would appear that of every 100 children exposed to risk and not given serum 75 will take measles, whereas of every 100 children given serum less than 14 will fall ill, and that four out of every five attacks of measles would be averted or postponed by the administration of serum.

When we come to deal with the efficacy of adult serum as compared with convalescent measles serum the data must be submitted to careful statistical analysis. To quote from Dr. Gunn's report [2]:—

"In an ideal scientific test of a prophylactic method one would use the method in alternate cases, e.g., in every school or hospital every other inmate exposed to risk would be given a dose of serum. In such circumstances,

[2] L.C.C. Report on the 1931–32 Measles Epidemic. London: P. S. King and Son, Ltd. 1933. No. 2996. 2*s*. 6*d*.

the protected and unprotected are strictly comparable and simple comparison of results, institution by institution, must give an answer to the question proposed—viz., Does the method of protection in fact protect? Administratively, no such plan could be carried out. We must, therefore, fall back upon the less satisfactory method of using, as controls of the prophylaxis, such unprotected children as, for various reasons, become available."

The conclusions arrived at in the statistical examination of the use of adult serum in the 1931–32 epidemic were as follows:

The total number of observations recorded was 2362. The adult serum series, consisting of 1475 observations, was divided into two groups: the first in which complete protection was desired consisted of 1133 cases, and the second in which attenuation was desired numbered 342 cases. The results of 680 injections of convalescent serum and observations on 207 uninjected contacts during the same epidemic period were utilised to form the control series.

The clinical results of the administration of convalescent and adult serum were compared; the figures were standardised to make allowance for variations in the age-distributions. The analysis showed that convalescent serum is a more potent prophylactic agent than the adult serum for each age-group, but that the difference between them is of statistical significance only in respect of children under 5 years of age. The difference is greatest in the 1–3 years age-group, at which period susceptibility is at its highest. After the age of 5 years there is nothing to choose between the two sera, and after the age of 10 years the effect of either serum on the issue is negligible; at any rate as far as the London school-child is concerned.

When the results with convalescent serum in the infectious diseases hospitals are compared with those of adult serum (similar age-distribution and probability of effective exposure) the significant difference favouring convalescent serum is limited to children under 3 years of age. The difference favouring convalescent serum remains true only in respect of injections given on or before the third day after contact. The attenuating results following one-half the standard dose given before the sixth day are as good as those after the full dose given on or after the sixth day.

Finally, the analysis showed conclusively that adult serum is a valuable measure in measles prophylaxis. In its protective and attenuating action, it is only slightly inferior to convalescent serum and merits a high place in any future policy of measles control.

In the 1931–32 epidemic 24,085 c.cm. of adult serum, roughly 2408 doses, were collected by the medical staff of the L.C.C. and in the 1933–34 epidemic 27,335 c.cm., roughly 2733 doses. These amounts were of course far too small to allow work to be done on an adequate scale. Up to the present, voluntary donors, usually the nursing staff in the L.C.C. hospitals and medical students, have been relied on for blood for the preparation of adult serum. The Council has, however, just given authority for an appeal to be made for donors generally, and has agreed to pay each of them 5*s*. for providing their blood. In a healthy young adult 250 c.cm. of blood can easily be withdrawn and this provides about half its bulk in serum. By this means it is hoped to obtain sufficient material to carry out the effective control of measles during the current epidemic.

If attenuation can be carried out on a large scale in residential and day schools, measles instead of producing havoc in deaths or physical impairment and causing dislocation of school organisation will definitely be under control. Imagine what a boon this will be to medical officers in public schools where measles, although occurring in older boys and girls, produces considerable dislocation of school attendance. Alternatively, in the case of delicate or sick children in hospitals, or those about to undergo operations, prevention will result in removal of the risks associated with the disease in those least able to stand up to it. Prevention may also be aimed at in the wards of hospitals to avoid placing them in quarantine after a case of measles has occurred.

Fig. 3 gives in concise form typical temperature charts of cases of measles, uncomplicated and complicated, and of children exposed to measles where serum is used to obtain either complete immunity or attenuation. The temperature may be taken to show the reaction of the body to the poison and is therefore an index of the amount of the poison in the child's circulation. The chart also shows what happens to the child from the date of infection until convalescence is established, along with the doses of serum and the dates on which it is to be given in order to modify the disease.

PLACENTAL EXTRACT

It is well known that infants under 9 months old are generally immune to the common infectious diseases. This immunity is ascribed to their obtaining the antibodies from their mothers. If this assumption is correct these immune bodies must be supplied to the child through the mother's placenta. As a practical outcome of this theory placental extracts have been employed to produce protection or attenuation. In placentas it is apparently the globulin which contains these immune bodies. Globulins have been abstracted from placentas and submitted to test. It has been shown, for instance, that such globulin contains 5 units of diphtheria antitoxin per c.cm. and that, tested by the Schultz-Charlton reaction, it contains quite an appreciable amount of scarlatinal antitoxin. There is no means of testing such globulin for the presence of measles antibodies except by the direct method of using it with a view to the prevention of the disease in contacts. This has been done in some cases with promising results. The substance is called immune globulin. It is being prepared in sufficient quantities in the L.C.C. laboratories to be tried side by side with convalescent and adult human serum and it is hoped to accumulate sufficient data by the end of the coming epidemic to say whether, like adult serum, it can play a part in the control of measles. Various preparations of human immune globulin have been tried in America and a full account of the trial has been given.[3]

Two commercial preparations of placental extract—i.e., of human immune globulin—are now available; they are (1) Placimmunin prepared by E. R. Squibb and Son, and (2) immune globulin (human) prepared by Lederle. These two products have been submitted to the Council on Pharmacy and Chemistry of the U.S.A. They withheld comment on Squibb's product on the ground that the data supplied were insufficient, but they reported as follows on Lederle's preparation.

1. The product is as efficacious for prevention as convalescent serum.
2. The clinical results show sufficient evidence to warrant the doses recommended for prevention. On the available evidence those for attenuation are questionable.
3. Although it is a promising immunising agent more evidence of its value is needed before it is recommended for general use.

We are hoping to test this preparation in London during the present epidemic.

However inadequate and incomplete this account of the past, present, and possible future of measles may be, I hope I have shown that the older methods

[3] Jour. Amer. Med. Assoc., 1935, cv., 493.

of control have failed and that, by means of passive immunisation by serum or placental extracts, we have entered on a promising stage in the battle against measles. Much work on the epidemiology of the disease remains to be done, and those of us to whom the control of infectious diseases in hospitals, schools, and homes is entrusted are fully alive to the need for constant experiment.

I am indebted to Dr. W. Gunn for the loan of the three charts on which the figures are based.

MEDICINE AND THE LAW

Medical Supervision of Special Treatment Establishment

THE London County Council has, by Local Act, statutory powers of licensing massage and special treatment establishments. Under these powers a licence was granted to Mr. Alexander Barthels, of Weymouth House, Hallam-street, with a condition that he should not give ultra-violet ray treatment without the supervision of a medical practitioner. An inspector of the L.C.C. found that the condition was being broken and Mr. Barthels was summoned at Marlborough-street police-court last week. The inspector's evidence was that a patient who was undergoing such treatment was asked if she had seen a doctor and if a doctor had recommended the treatment. The patient answered that she had been to many doctors and had received no benefit and had therefore decided to try Mr. Barthels. There was no question of Mr. Barthels's competence. His legal representative was prepared to elaborate the defendant's skill, but the magistrate observed that his competence was irrelevant. The summons was dismissed under the Probation of Offenders Act on payment of £5 5*s*. costs to the L.C.C. and on the defendant undertaking not to commit a further breach of his licence. The licensee could hardly contend that he was unaware of the restrictive condition. Deliberate violation of the condition is hardly the proper method of appealing against it.

Fraudulent Conversion by Hospital Secretary

Offences between January and October last year formed the subject of charges at West Sussex Quarter Sessions last week against Major W. I. Rogers, former secretary of the Bognor Regis War Memorial Hospital. He pleaded guilty to various charges of fraudulent conversion, intent to defraud, and omission to make entries as to orders of stamps. It was urged in mitigation of sentence that the accused had formerly borne an exemplary character and had received inadequate pay. The chairman of the bench, Mr. Roland Burrows, K.C., observed that judges had from time to time commented on the fact that it was only persons with an exemplary character who obtained posts where they could commit offences of this kind. Passing sentence of 12 months' imprisonment in the second division, he expressed the view that the checking of the hospital accounts appeared to have been lamentably lax, and that, with better supervision, the defendant would not have found himself in his present position.

Unfitness to Plead

A careful paper on "unfitness to plead," read last year by Dr. W. Davies Higson, medical officer of Liverpool Prison, before the annual conference of prison medical officers, is published in the *Journal of Mental Science* (1935, cxxxi., 822). He points out that this preliminary question of fitness to plead in criminal proceedings is one with which prison doctors may often have to deal. It is common experience, indeed, that judges pay special respect to their evidence. It might be added that the Atkin Committee on Insanity and Crime stressed the importance of medical officers of prisons having special knowledge of mental disorder. As has sometimes been pointed out, the courts examine a prisoner's fitness to plead more carefully in serious charges like murder than in merely trivial offences, and, on the whole, the proportion of prisoners found unfit to plead is advancing.

The Atkin committee advised that a man should not be found unfit to plead except on the evidence of two doctors at least; one of these would usually be the medical officer of the prison. The committee recommended the retention of the procedure. Mental disorder is sometimes so obvious that trial would be a farce; on the other hand, where there is any element of doubt, it is a strong step to put a man away as a criminal lunatic when he has not been found to have committed a criminal act. The committee approved the standing orders of the Prison Commissioners which recommend that a prisoner be left to stand his trial unless there are strong reasons to the contrary. It remarked that it was aware of evidence of persons of unsound mind having pleaded guilty either to gratify an insane desire for punishment or to avoid inquiry into their mental condition. The evidence which justifies a finding of unfitness to plead consists of showing that a prisoner suffers from such defect or disease of the mind as not to be able to understand the nature of the proceedings against him, or the difference between a plea of "guilty" and a plea of "not guilty," or that he is unable to follow the course of the trial or instruct counsel in his defence or appreciate that he has the right to challenge a juror. On these points the medical witness can state the facts he has observed and the conclusions he has formed, but it is for the jury to decide the issue. The law sees no inherent difficulty in a man or woman being insane and yet fit to plead.

By way of illustration Dr. Higson mentions two instances of the kind of complication which may be introduced. A woman was to be tried at Liverpool assizes for murder of her child. She was brought from Manchester where the medical officer had reported that, during remand there were no indications that she would be likely to be unfit to plead on arraignment. Yet on arrival at the Liverpool assize-court she was in such a state of extreme emotion and mental distress that the medical witness was prepared to give evidence, from further observation, that she was not fit to plead. In the other instance the prisoner had been charged with shooting with intent to murder. His mental condition indicated a straightforward case of paranoia. Medical witnesses for the defence testified that he was unfit to plead. He protested and, his counsel not objecting, the judge told the jury to return a verdict that the man was fit to plead. He was then indicted and, in spite of protests from his counsel, he pleaded guilty; the result was a sentence of 20 years' penal servitude. Dr. Higson records the interesting opinion of one of the medical witnesses, who discussed the case afterwards, that the judge overlooked the unlikely contingency of the prisoner pleading guilty, and that the jury was the more ready to follow the direction to find the man fit to plead because they were anxious to hear what was rather a sensational case.

STERILISATION IN THE U.S.A.

IN May of 1934 a committee of the American Neurological Association was appointed to evaluate in a critical manner the problems of the inheritance of various mental abnormalities and neurological disorders. The committee consisted of Dr. Abraham Myerson (chairman), Dr. James B. Ayer, Dr. Tracy J. Putnam, Dr. Clyde E. Keeler, consultant in eugenics, and Dr. Leo Alexander, research associate. The committee was subsidised by a grant from the Carnegie Foundation. The conditions under which it was appointed and the method of its procedure have something in common with those which related to the recent Departmental Committee on Sterilisation (the Brock Committee). Its report shows that the possible benefits of sterilisation seem to have been exaggerated in America in much the same way as in this country. In a preface the committee states:

> We have tried to free our minds from the obsessive traditions of psychiatry and eugenics and this report is, we believe, as unbiased and critical and as nearly objective as we can make it. We hope that the subject matter of the report and the recommendations will be of value both in evaluating past work and as the basis for legislative and especially for research activity.

THE COMMITTEE'S FINDINGS

The findings of this committee are set forth in 12 chapters, of which the last consists of a valuable and comprehensive list of references occupying no less than 16 pages. Arguments commonly used for and against sterilisation receive careful consideration. In the fourth chapter of the report the contention that a need for sterilisation is created by the increase of mental disorders in the United States is examined. An interesting analysis is made of the commitment rate in two States wherein the psychiatric services are highly perfected—namely, Massachusetts and New York. The conclusion is reached that if certain relevant factors are taken into account, there are no valid reasons for supposing that an increase in mental disorders has taken place. The better organised the hospital services, the greater will be the inducement to solicitous relatives to consent to the commitment of mentally abnormal persons; the increasing age of the community, moreover, naturally leads to an increase in the proportion of senile psychoses admitted into mental hospitals.

In a discussion of the relation of genetics to eugenics, the American committee reaches conclusions closely similar to those of the Departmental Committee. They stress the importance of the interaction between hereditary and environmental factors. Recent genetic investigations are quoted in support of the view that "the environment may be conceived as a releasing agent for the manifestation of a character without which, so to speak, the character could not appear." Chapter 7 consists of some shrewd criticisms of widely accepted investigations bearing upon the inheritance of mental diseases and defects. These criticisms pave the way for the committee's chief recommendation, namely, that a—

> "concerted, co-ordinated and planned long-time research should be instituted in some State which is well-organized psychiatrically and socially, and which has a stable population. A central group headed by a full-time director should determine, after due study, the technique of research, this being the first and all important step. Certain hospitals might be selected to study the mental diseases, feeble-mindedness and epilepsy, through the operations of a genetic group stationed therein. Arrangements could be made for the study of samples of the total population through schools, universities, factories and such other institutions and social aggregations as may be decided upon."

As is to be expected, the report is sceptical as to the possibility of eliminating crime by genetic methods. "Most writers," they say, "agree that while there may be a constitution (favouring criminality), the effort to breed it out by any eugenical measures is, in the present state of our knowledge, not to be recommended and that more fruitful approaches to crime are to be found in social measures of one type or another." With regard to the relation between genius and mental abnormalities, the committee state categorically that "feeble-mindedness breeds no genius and that we have nothing to fear on that score from the sterilisation of the feeble-minded"; but a different view is taken of the effect of the indiscriminate application of the sterilisation law to manic-depressives. Referring to the work of Lange-Eichbaum, they are satisfied that valid and reliable evidence has been adduced to indicate that sterilisation, applied as a wholesale measure to manic-depressives and their relatives, might well cut off from the race some of its most valued and valuable members.

RECOMMENDATIONS

The committee's most important recommendation, the promotion of further research, has already been noted. But they make some further recommendations which they preface by the three following statements of opinion: (1) our knowledge of human genetics does not justify us in advocating the sterilisation of people who are themselves normal; (2) there is at present no scientific basis for sterilisation on account of immorality or character defect; (3) nothing in the acceptance of heredity as a factor in the genesis of any condition considered by this report excludes the environmental agencies of life as equally potent and, in many instances, as even more effective.

In the light of these statements, the following recommendations are submitted to the American Neurological Association for its considerations:—

(1) Any law concerning sterilisation passed in the United States under the present state of knowledge should be voluntary and regulatory rather than compulsory.

(2) Any law concerning sterilisation should be applicable not only to patients in State institutions, but also to those in private institutions and those at large in the community.

(3) The central machinery for administering any law should be one or several Boards composed chiefly of persons who have had special training and experience in the problems involved. These should study each case on its individual merits and should strongly urge, suggest, or recommend against sterilisation according to its findings. Cases could be brought before such a Board by superintendents of institutions, private physicians, parents, or guardians, or by the patients themselves.

(4) Adequate legal protection for members of such a Board and for the surgeons carrying out such recommendations should be secured by statute.

The committee feels that sterilisation is not to be recommended as a general measure applicable to all persons of whose infirmity a certain diagnosis has been made; they recommend it rather as applicable in selected cases of certain diseases subject to the consent of the patient and those responsible for him. They regard the measure as appropriate to the following conditions in the order given:—

(*a*) Huntington's chorea, hereditary optic atrophy, Friedreich's ataxia, and certain other disabling degenerative diseases recognised as hereditary.

(*b*) Feeble-mindedness of familial type.

(*c*) Dementia præcox (schizophrenia).

(*d*) Manic-depressive psychosis.
(*e*) Epilepsy.

A COMPARISON

The general resemblance between these recommendations and those of our own Departmental Committee will be obvious to persons familiar with the latter. Both committees advocate voluntary measures only, they recommend that they should apply to selected cases only, and that facilities for sterilisation should be made available to patients whether in State institutions or not. Both ask for adequate legal protection for the doctors concerned. The chief point of difference resides in the procedure recommended by which patients should apply to be sterilised. The Departmental Committee recommend that wherever possible the patient himself should apply; the American committee wishes to make it possible for superintendents of institutions and private physicians also to apply. The Departmental Committee recommends that each application, supported by two medical recommendations, be communicated to the Minister of Health who should be vested with the power of authorising or vetoing an operation; the American committee recommends that each case be adjudicated by a specially appointed Board. In this respect, its recommendations favour the type of safeguard now in practice in Germany.

VIENNA

(FROM OUR OWN CORRESPONDENT)

AGE-GROUPS OF DOCTORS

In the course of an inquiry into the possibility of establishing old age pensions for medical practitioners, the Austrian Union of Practitioners (Reichsverband der Aerzte) has collected some interesting material relating to the age-groups of doctors in Vienna. The following Table indicates the general position:—

Age-group.	Male.	Female.	Total.
90–65 years old	550	2	552
64–45 ,, ,, ...	1256	90	1346
44–35 ,, ,, ...	1188	287	1475
34–25 ,, ,, ...	903	212	1115
Under 25 years	1	0	1
—	3898	591	4489

There are 872 (or 15 per cent. of the total) doctors aged 60 years and over, and it is proof of the hard times the medical profession is experiencing that they are nearly all still in practice. During the last 20 years either their savings have been lost or their practices and incomes have dwindled. Among the recommendations brought forward by the Union has been a scheme providing for pensions for all practitioners over 65 on condition they retire from practice and make way for the younger men. But to provide even the very modest pension of 250 Austrian schillings (about £10) a month a large capital fund would have to be collected, and under present conditions this is quite out of the question. The outlook is therefore not very encouraging.

TUBERCULOSIS REPORT FOR 1934

The recently published report of the health department of the Ministry of Social Welfare records that its fight against tuberculosis is conducted from 93 centres working with a staff of 153 doctors, 104 trained nurses, and 71 follow-up nurses, who advise the patients, keep in touch with them, arrange for hospital or sanatorium treatment where necessary, and organise preventive work among the contacts. In 1934 31,793 new cases were registered, of whom 44 per cent. were men. Rather more than half were over 18 years of age. About 8 per cent., mostly from the country districts, were classified as seriously ill. The cases reported in Vienna itself were not so grave. In 60 per cent. of the cases other members of the family were found to be also infected, in 20 per cent. seriously. Altogether during 1934 280,740 patients attended the centres (65 per cent. at the clinics in Vienna), and of these 167,144 were kept under constant supervision, 8 per cent. being open tuberculosis cases. The 169,070 examinations conducted by the clinics included 11,114 sputum tests, 15,616 biological tests, and 32,296 radiological examinations. The homes of 49,611 patients were visited, and 28 per cent. were condemned as unhygienic, while 70 per cent. were found to be overcrowded—i.e., more than three people living in one room. Of the gravely ill patients only 33 per cent. had a room to themselves, and 16 per cent. of them had to share even their beds. The amelioration of these conditions is the chief aim and work of the clinics.

RECENT LOSSES IN THE MEDICAL FACULTY

Prof. Constantin Bucura, the eminent gynæcologist, has died suddenly at the age of 62. Prof. Bucura, who was of Greek descent, and held the position of chief of the department of gynæcology at the Vienna Polyclinic, where he attracted many students from the Balkan cities. He first won recognition with his work on the theory of conception and fertility, but his most recent researches dealt with cancer of the uterus and ovaries. The death is also reported of Dr. Norbert Dohan who fell a victim to an affection of the blood as a result of his work as chief radiologist of the "Krankenkasse." Dr. Fritz Passim, director of the Children's Hospital of the second district of Vienna, has also died at the age of 67. He was well known as a bacteriologist and for his research work in tuberculosis, especially tuberculous meningitis.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

EDINBURGH ROYAL INFIRMARY

The ambitious extension and reconstruction schemes undertaken by the management of the Royal Infirmary of Edinburgh are causing considerable anxiety to their promoters. In the annual report for the year ending Sept. 30th, 1935, the managers point out that £150,000 is still required to complete the scheme. A further appeal will shortly have to be made to the public for the necessary funds. The new maternity wing is rapidly taking shape, and the foundations of the new nurses' home have been laid. It is hoped that the full scheme will be completed by Whitsunday, 1937, when the management have promised to take over the functions of the Edinburgh Royal Maternity and Simpson Memorial Hospital. The large new block near the west gate, which is almost finished, is to be used for the treatment of diseases of the skin and venereal diseases, and the wards at present devoted to the treatment of these diseases will be converted into surgical wards to help relieve the ever-increasing surgical waiting-list. Reconstruction of the boiler-house is to cost £22,000, and new X ray apparatus will cost over

£10,000, for the X ray equipment, which was the best obtainable in 1926, is now out of date and will have to be scrapped. The number of patients treated during the year as in-patients was 20,695 (daily average 936), while the 67,583 new out-patients seen during the year represented an increase of 791 over the previous year's figure. Motor accident cases admitted to the wards numbered 366, and half the cost of maintenance of these cases was recovered from insurance companies. The managers report a satisfactory increase in ordinary income. The deficit on the ordinary account amounts to only £28,000, but to this must be added the deficiency on auxiliary institutions, and sums amounting to nearly £27,000 which were expended under the heading of extraordinary expenditure, making a total deficit of over £61,000. Fortunately nearly £75,000 was received in the form of free legacies during the year, and bequests for endowment purposes amounted to over £18,000. In conclusion the managers point out that the large additions being made to what is already the largest voluntary hospital in Britain must lead to a considerable increase in the annual expenditure.

IRELAND

(FROM OUR OWN CORRESPONDENT)

TUBERCULOSIS IN CATTLE

A YEAR or two ago Dr. James Ryan, Minister for Agriculture in the Irish Free State, held out hope that in his work of reducing the number of surplus cattle in the country, special attention might be given to the elimination of tuberculous stock. Last week he informed a congress of the Irish Dairy Shorthorn Breeders' Society that such a scheme was impracticable. His reasons are somewhat puzzling. On the one hand he maintained that there is no need for alarm in regard to tuberculosis, and stated that the investigations that had been carried out had shown that things were not nearly as bad in their herds as they had feared. On the other hand, he said that the elimination of tuberculosis would cost millions of money, would require more veterinary surgeons than they had in the country, and would take many years to accomplish. It is difficult to reconcile these statements. Dr. Ryan's opinion that there is no need for alarm in regard to tuberculosis will not carry conviction. The thousands of tuberculous children in the hospitals throughout the country as the result of drinking tuberculous milk speak too loudly in reply.

PARIS

(FROM OUR OWN CORRESPONDENT)

MEDICAL PRIZES AND AWARDS

THE French Academy of Medicine is the judge and donor of many prizes for the advancement of medical science. This year it has awarded 52 such prizes. At a meeting of the Academy of Medicine on Dec. 10th, a report was presented on the prize-winners for 1935. It is curious how varied are the conditions laid down by the donors for the winning of these prizes. The Ernest Guérétin Prize is awarded to the authors of works based on clinical observations made on the human being, without any sort of vivisection or any experience depending on animals. It needs no superhuman insight to fathom the donor's attitude towards vivisection. His prize was this time shared, Dr. Antonelli, author of a clinical, anatomical, and radiological study of the "poumon cardiaque au cours de l'insuffisance auriculaire gauche" receiving four-fifths of the prize, and Dr. Liège the remainder for his study of the indications, results, technique, and accidents of blood transfusion. The Baron Larrey Prize for the best work on medical statistics was also divided last year, between Dr. Fricker for his study of the Schick reaction and its relation to endemic diphtheria in France, and Dr. du Bourguet for his study of penetrating wounds of the abdomen. The Lefèvre Prize for the best work on melancholia was not awarded, an ætiological and clinical study of Morel's melancholia being considered worthy of honourable mention, but no more. Applicants for such prizes must send in their theses to the Secretariat of the Academy of Medicine before March 1st of the year in which the prize is to be awarded. The text must be in French or Latin, and the Academy of Medicine is the sole judge. For some prizes the applicants must be anonymous; for others, anonymity is optional; and for others, again, it is forbidden. For some prizes only printed works are considered. With certain important exceptions, foreigners as well as Frenchmen are eligible.

A QUESTION OF HOSPITAL ADMINISTRATION

FOR nearly a year there has been disagreement between the hospital authorities and the majority of the honorary medical staff of the Bermondsey Medical Mission Hospital for Women and Children on a matter of principle. The disagreement has now culminated in the resignation of the members of the honorary staff. We understand that in February, 1935, six members of this staff sent a letter to the hospital committee making a recommendation, concerning an appointment to the resident medical staff, which was disregarded by the hospital committee who disapproved of this method of approach. After prolonged discussion and correspondence the members of the honorary medical staff came to the conclusion that there were certain unsatisfactory features in the organisation of the hospital. For example, there was no provision for a medical committee of members of the active staff, and medical appointments to this staff and decisions on medical matters were often made without consultation with the honorary staff. During the course of the discussions it was indicated to the six members of the staff that the medical director of the hospital proposed to close those departments of the hospital for which these six members were responsible. Members of the honorary medical staff then asked that the administration of the hospital should include a medical committee formed of the medical director and the active members of the honorary staff, for the purpose of advising on medical matters, including appointments to the staff. It was intimated on behalf of the hospital authorities that this suggestion was unacceptable. The six members finally resigned from the hospital staff in October, 1935, because they considered the existence and recognition of a medical committee with the usual functions to be essential in the interests of the hospital and its patients, and they were given the full support of their colleagues on the honorary staff.

The Bermondsey Medical Mission Hospital was founded in 1904 and rebuilt in 1928. It is staffed entirely by women doctors, and contains 20 beds and two private wards for paying patients.

OBITUARY

THOMAS HENNESSY, F.R.C.S.I., D.P.H.

Dr. Thomas Hennessy, who died suddenly in Dublin on Thursday, Jan. 2nd, was well known in the political and medical world. He was Irish secretary of the British Medical Association and arrived at his office as usual in the morning. After attending to correspondence he called at a neighbouring office where he collapsed and breathing ceased. He had suffered for many years from myocardial weakness and had long anticipated a sudden end, although his general condition recently had not given rise to any immediate anxiety.

Thomas Hennessy was born 65 years ago in Limerick, and received his medical education in Queen's College, Cork, and took the Irish double diploma in 1894, having as a student distinguished himself as a Rugby football player. In 1898 he was admitted to the fellowship of the Royal College of Surgeons in Ireland, and in 1902 he obtained from the College the Diploma in Public Health. He started as a country practitioner and then acted for a long period as dispensary medical officer of the Clogheen district, Tipperary, where he made himself a fine and more than local reputation. He was an able and particularly sympathetic practitioner and as a result of his strenuous work in practice he developed the cardiac weakness which shortened his life. From the time of his entry to the profession he became interested in medico-political affairs; he was an active member of the council of the Irish Medical Association, and in the special struggles which lay before the Irish medical profession on the introduction of the first National Health Insurance Bill, Hennessy was recognised as one of the most capable and energetic leaders. When, just before the war, the B.M.A. decided to establish a secretariat in Ireland Hennessy was offered the position of secretary, and though loth to leave practice, was influenced by his delicate condition of health to accept the post, which he held to the end of last year when he took up the duties of medical secretary to the Irish Medical Union which replaces both the I.M.A. and the B.M.A. in the Irish Free State. His energy and capacity were notable in his official business and undoubtedly his long experience as a country doctor fitted him for dealing with the problems which came before him, such as, for example, the settlement of the dispute between the medical profession and the National Health Insurance committees concerning the certification of insured persons and their title to benefit. The remuneration of the medical profession and the conditions of a poor-law medical service also presented difficulties in which Hennessy proved to be as reasonably conciliatory as he was strong in advocacy of what he considered right. It was mainly owing to his personal influence that these struggles terminated satisfactorily, if not completely so, for the medical profession. The War Office was also indebted to his administrative work on the medical war committees, for undoubtedly the part that he played at the deliberations of these bodies led to considerable recruiting of young Irish men to military service of the Crown. It goes without saying that to such a man individual practitioners in difficulty would often turn for advice, and over and above his official work he was hugely occupied in giving advice to junior medical men who found themselves in difficulties, when it was characteristic of him that he gave his assistance without inquiring if those who sought it were members of the bodies to which he was secretary.

DR. HENNESSY

All this official work led to no narrow concentration on the professional side of the many questions that came before him. On the contrary, Hennessy always had as his main object the welfare of the public, so that it came about that he was not only the champion of the medical profession in movements for redress of general grievances and the confidential adviser to numerous individual medical men, but also was the persistent advocate of all movements to improve public conditions and promote public health service in Ireland. He may be regarded as having been the father of modern health reform in the Irish Free State. It was mainly through him that the Irish public health council was established in 1919 and all subsequent health reforms may be regarded as having been placed in his hands. He entered general politics in a noticeable manner, being elected to the Dáil in 1927 for South Dublin on the vacancy caused by the death of the Countess Markieviez. While a member of the Dáil he took a prominent part in public affairs. He was a convinced Nationalist and gave his support to the Cosgrave party on the formation of the Irish Free State, and in coöperation with the late Sir James Craig paid particular attention in the Irish Parliament to matters concerning health. He was twice elected to the South Dublin seat and his common sense, honesty, and generally sympathetic attitude were so manifest that there was general regret when he lost his seat some six years later.

Our Dublin correspondent writes: "No account of Hennessy's public work will convey to those who did not know him a due impression of his winning personality. Honourable, broad-minded, far-seeing, nothing really roused his anger but intrigue or unfairness. He would shock his party colleagues by his frank denunciation of policy of which he disapproved. A hearty lover of his own country he had no ill-will to any other country. His judgments were sometimes impulsive but always independent and generous. A strong party-man he would often see little good in the other party, in which nevertheless he had invariably many personal friends, and even in sharp controversy he would disarm hostility by a joke or a smile. A born fighter he never fought but in what he held to be a right cause and never for himself. In recent years his health sometimes gave rise to anxiety and he knew that his life was uncertain, but his courage and activity did not fail. He died as he would have wished, but his sudden leaving is a grave loss to the profession to which he gave his best energies and to his country as a whole."

GEORGE DOUGLAS MATHEWSON, B.Sc., M.B., B.Ch., F.R.C.P. Edin.

Dr. George Mathewson, who died on New Year's eve, was the son of Mr. James Mathewson, of Dunfermline, and received his medical education at the University of Edinburgh, where he was Mouat scholar and graduated in 1905 as B.Sc., and M.B., Ch.B. He acted as house surgeon at the Royal Hospital for Sick Children, Edinburgh, and house physician at the Royal Infirmary, where he was also clinical tutor in medicine. He was appointed assistant physician to the Leith Hospital and later filled the same post at the Royal Infirmary, while he was also physician to the Royal Public Dispensary in Edinburgh. Elected F.R.C.P. Edin. in 1912, he became lecturer in clinical medicine in the University of Edinburgh and full physician at the Leith Hospital and at the Royal Infirmary. Both the University of Edinburgh and the Royal Infirmary have lost in him a distinguished colleague and able teacher, while his infrequent writings showed the special direction of his studies as a cardiologist, which were recognised also when he became responsible for the organisation of a cardiological department at Salonika during his period of war service. He was a member of the Association of Physicians of Great Britain.

Mr. J. M. Graham, Ch.M., F.R.C.S. Edin., has sent the following appreciation of his colleague:—

"The death of George Mathewson has come as a great blow to the medical profession in Edinburgh. His friends knew that he had successfully passed the crisis of a serious attack of pneumonia. He was apparently well on the road to recovery when, on the last night of the past year, the blow fell, and it was learned that he had suddenly passed away. Although only promoted to be one of the senior physicians at the Royal Infirmary 18 months ago, he had already during his years of service as assistant physician, and as physician to Leith Hospital, established his reputation as a consultant, and as a teacher of clinical medicine. Those of us who knew Mathewson as a student at Edinburgh University, felt that he would be successful in whatever branch of professional work he adopted. Even as a senior schoolboy he had the ability and character, which, without any strong effort on his part, led him to the top of his class. His medical work was on the same high plane, and it was characteristic of him that it should be accomplished easily and with no apparent strain. Above all, he enjoyed his hospital work, and his contact with students. No one could have shown more consideration for the feelings of his patients. Mathewson's first and last thought was for the individual he was treating. That his patients appreciated his kindly methods was obvious to any one who accompanied him during a ward visit. The research work which Mathewson carried out in the clinical laboratory of the Royal Infirmary established his reputation as an authority on the physiology and clinical pathology of the heart. His special knowledge in this branch of medicine was recognised when, during his period of war service, he was nominated to organise a cardiological department for the Salonika Army. Although Mathewson did not contribute regularly to medical literature, what he did write was always original and a definite contribution to knowledge. He was the last man to 'cultivate' a reputation. At staff and medical meetings he did not speak often, but his remarks were always very much to the point. His ideas were clear and concise, speaking came easily to him, and he had a flair for the 'right word.' He had a natural gift for teaching, and enjoyed the appreciation of his students. In his own student days the teaching of clinical medicine in Edinburgh had reached a very high standard; Mathewson had already shown that he was well equipped to maintain this fine tradition. Nothing gave him greater pleasure than the knowledge, just before his last illness, that his ward team had reached the final in the Old Residents Cup Rugby Competition.

"Mathewson was always on the best of terms with his colleagues, and with those working under him. He was genuine and loyal in his friendships. He looked back with special pleasure on his period of war service in Macedonia, where many new friends were made and old friendships were confirmed. He was at his best as an active member of several of the famous Edinburgh medical dining clubs. For many years he had been one of the leading spirits in the Centenarian Club, and by none will he be missed more than by his fellow members. His reputation for wit and repartee was acclaimed when he was appointed secretary of the Medico-Chirurgical Club. His minutes at the biennial dinner were looked forward to as the chief entertainment of the evening. It was a pleasure to meet Mathewson in his own house. He was an ideal host. His intimate friends knew how perfectly happy he was in his home life. To his widow and to his children, a daughter and a son, all will offer heartfelt sympathy."

EDMUND VALENTINE GIBSON, M.D. Edin.

THE death occurred on Dec. 23rd of Dr. E. V. Gibson, of Grange, Guernsey, where he had been in practice for many years. Born in Derbyshire in 1865, the son of the Rev. A. A. Gibson, of Stanley, he was educated at Trent College and entered the University of Edinburgh as a medical student. He graduated as M.B., C.M. Edin. in 1890 and in the same year was appointed house surgeon to the General Hospital, Birmingham. Thereafter he held resident posts at the East London Children's Hospital, at the Devonshire Hospital, Buxton, and was for a time resident medical officer to the Victoria Infirmary, Glasgow. At different times while holding hospital appointments he made interesting clinical communications to THE LANCET, for he was a very competent and well-informed man. He then, some forty years ago, established himself in practice at Guernsey, was appointed surgeon to St. Peter's Port Hospital and to other institutions on the island, and conducted a large practice, latterly in association with his nephew, Dr. R. E. Gibson, and his son-in-law, Dr. W. B. Fox. During the war he served with the rank of surgeon-major in the 1st Royal Guernsey Light Infantry. Dr. Gibson had been a great athlete during his university days, and in later years became an enthusiastic horticulturist, possessing at his villa "Paradise" a remarkably beautiful garden. He was 70 years of age at his death and was on the eve of retirement.

LILIAN MARY CHESNEY, M.B., Ch.B. Edin., D.P.H. Durh.

THE death took place at the close of the year in Palma de Majorca of Dr. Lilian Chesney, who for a time practised in London as a throat and nose specialist. She was the youngest daughter of General Sir George Chesney, author of the famous skit "The Battle of Dorking," and received her education in Edinburgh where she graduated M.B., Ch.B. in 1899, afterwards taking out post-graduate courses at Vienna. She held clinical and residential appointments in various institutions before deciding to

practise as a laryngologist, and obtained the D.P.H. Durh. in 1908. On the outbreak of war she went as assistant surgeon with the Russian Unit of the Scottish Women's Hospital and was decorated with the orders of St. Anne and St. Sava. Later she acted as surgeon to the Serbo-English field hospital and recorded her experiences in the *Practitioner* in 1916, especially with regard to typhus fever. In 1920 she went to live in Majorca and from there communicated her impressions to the *Practitioner* of the Balearic Islands as a health resort. Dr. Lilian Chesney, who had many friends in England, promoted that habit of visiting the Balearic Islands for health and holiday purposes, which seems now to be firmly established.

JAMES DUNCAN HART, M.C., M.D., D.P.H. Glasg.

THE death occurred on Dec. 18th of Dr. James Duncan Hart, of North Walsham, Norfolk. A Glasgow man, he was educated at Fettes College and the University of Glasgow, where he graduated as M.B., Ch.B. in 1905. After some post-graduate work at Bonn he served as medical officer to a group of tea estates in Assam, but at the outbreak of war returned to be attached to the 12th Battalion of the London Regiment, and for his war service was more than once mentioned in despatches and awarded the Military Cross. He then settled at North Walsham where he was a member of the staff of the War Memorial Cottage Hospital, a keen supporter of the St. John Ambulance Brigade, and took a prominent part in the social life of the neighbourhood. His death, which occurred suddenly at the age of 52, was deeply regretted in the neighbourhood as was manifested by the large attendance at the funeral.

ROBERT TURNER, M.D. Aberd., F.R.C.S. Edin.

THE death is announced of Dr. Robert Turner at his residence in Llandudno, where he had retired after many years' practice in Bootle. Born in Banff, Dr. Turner received his medical education in Aberdeen and Liverpool. He graduated as M.B., C.M. Aberd. in 1894 and later proceeded to the M.D. degree, acquiring also the diploma of F.R.C.S. Edin. Shortly afterwards he started in practice in Bootle, where he attained success through his skill and his devotion to his work. He also took an active interest in the civic affairs of the borough and acted as mayor of Bootle in 1923–24. He had only recently retired from practice and was in good health until a sudden illness, necessitating operation, proved fatal, in his sixty-sixth year.

JAMES HARRISON, M.R.C.S. Eng., L.S.A.

Dr. James Harrison of Garstang died on his seventy-eighth birthday on Dec. 28th. He was educated at Windermere College and proceeded to St. Bartholomew's Hospital for his medical training, qualifying in 1879 as M.R.C.S. Eng., L.S.A. After a short period of service at the Blackburn Infirmary he settled in Garstang over 50 years ago and took a prominent part in the public and social life of North Lancashire for nearly half a century. He was a member of the Garstang rural council for many years and served as a representative on the Lancashire county council. Shortly after retiring from practice some 15 years ago he was appointed a magistrate for the county, sitting on the same bench at Garstang with one of his daughters, also a county magistrate.

PANEL AND CONTRACT PRACTICE

Light Treatment as Medical Benefit

As a rule when an insurance practitioner administers light therapy he can charge the patient for it and, upon submitting form G.P. 45 to the insurance committee, no question is raised as to its being a specialist treatment. Provided the practitioner satisfies the local medical committee that he has the necessary qualifications he retains the fee he has charged. It may well be argued that the degree of skill required for the administration of light treatment is not beyond the scope of a general practitioner—it must be remembered that the treatment which a practitioner is required to give to his patients comprises all proper and necessary medical services other than those involving the application of special skill and experience of a degree or kind which general practitioners as a class cannot reasonably be expected to possess—but it is not every practitioner who possesses, or can reasonably be expected to possess, the apparatus for applying light treatment. While too it is a truism that every case is dealt with on its merits and that a decision on a particular case does not necessarily enunciate a principle, it is equally clear that a decision on a case may establish a presumption that the service is or is not within the scope of a practitioner's obligations, as for example the treatment of varicose veins by sclerosing fluid, and it is probably this reason which has led local medical committees to regard light treatment as outside the scope of medical benefit.

The Croydon local medical committee, however, are taking rather a different view, and in fact a few years ago decided that six cases of electrical treatment were not of a specialist character. That committee, in respect of two recent cases of sunlight treatment, have given their unanimous opinion that the service in question was not of a kind which involved the application of special skill or experience of a degree or kind which general practitioners as a class cannot reasonably be expected to possess. The grounds upon which their opinion is based are that while in certain cases electrotherapy would have to be regarded as a specialist service the treatment referred to in these cases is not within that category as, with the modern apparatus now available, any practitioner can reasonably be expected to perform such service. The insurance committee have concurred in the view of the local medical committee and the insured persons concerned will have their fees repaid to them.

The Insurance Acts Committee have already given their view that the general practitioner must be expected to keep reasonable pace with advances in medical science and, in a letter, they go so far as to indicate that ultra-violet ray treatment is not necessarily a specialist treatment, but that the question whether in particular cases the service is within the scope of a practitioner's agreement can only be decided in the full light of all the local circumstances. Most committees still hold that light treatment is outside the scope of medical benefit.

More Friendly Guidance

In another of what he calls his "written chats" the clerk of the London insurance committee devotes three paragraphs to the evergreen subject of medical records. While congratulating practitioners upon the improvement in the return of these

documents he rather cunningly takes advantage of the opportunity to indicate that the cases of ten particularly bad offenders have had to be referred to the medical service subcommittee. Then follows a reminder about the immediate transmission of records upon the death of insured persons. Practitioners are required in such circumstances to forward the medical record at once, without awaiting a formal notification from the committee, but the name of the deceased is not removed from their list until the fact of the death has been verified by the approved society. The action of some practitioners in refraining from sending in the records of persons known to be dead means in effect that they are claiming credits in respect of persons for whose treatment they are no longer responsible, and, what is worse, in respect of whom the practitioners' fund is receiving no money. But the question may be asked whether a record should be sent in if the patient has died while not under the care of the practitioner. Certainly it should, even if the endorsement has to be "said to have died in hospital" because, as indicated above, the fact of death has to be verified before other action is taken by the committee. Sometimes the first intimation received by the practitioner is the form G.P. 34, but in other cases he will know of the death long before the society or the committee does.

The letter goes on to remind practitioners of the desirability of notifying acceptances at frequent intervals—the terms of service prescribe "within seven days." The practitioner who sends in no acceptances at all during the quarter and then on the last day sends over 50 is making things hard for himself and putting sand in the mechanism of the Act. On prescribing appear two little notes which almost deserve to be called wise-cracks: (1) don't issue prescriptions on the committee's form to persons about whose title to benefit you have doubt, and (2) if you wonder whether you may properly prescribe a particular preparation don't ask the patient or the chemist to inquire. "We try," says the clerk, "to reply tactfully to inquiries by insured persons, but this is a matter which should be dealt with between the doctor and the committee direct."

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdrs. to Surg. Capts.: J. A. O'Flynn, G. V. Hobbs, and J. G. Boal.

Surg. Comdr. (retd.) A. A. Sanders, O.B.E., to rank of Surg. Capt. (retd.).

Surg. Lt. A. K. Stevenson to rank of Surg. Lt.-Comdr.

Surg. Lt.-Comdrs. (D) to Surg. Comdrs. (D): E. G. Adams, F. R. P. Williams, T. E. Brevetor, and J. L. Edwards.

Surg. Comdrs. K. A. I. Mackenzie to *President* for course, H. L. Douglas to *Titania*, M. Barton to *Apollo* (on commg.), and J. C. Sinclair to *President IV*.

Surg. Lt.-Comdrs. G. Phillips to *President* for course, and A. N. Forsyth to *Victory* for R.N.B., to *Boscawen* for H.M. Naval Base, Portland, and to *Drake* for R.N.B., addl.

Surg. Lt. T. McCarthy to *President* for R.A.F. Medical Officers' course.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdrs. to Surg. Comdrs.: G. McCoull and St. G. B. D. Gray.

Surg. Lt. A. E. Williams to *Royal Sovereign*.

Surg. Sub-Lt. R. V. Jones to *Victory* for R.N. Hosp., Haslar, for training.

ARMY MEDICAL SERVICES

Col. C. R. Millar, D.S.O., late R.A.M.C., having attained the age for retirement, is placed on ret. pay.

Lt.-Col. J. C. L. Hingston, from R.A.M.C., to be Col.

ROYAL ARMY MEDICAL CORPS

To be Bt. Cols.: Lt.-Cols. J. A. Manifold, D.S.O., and B. Biggar.

Maj. E. A. Sutton, M.C., to be Lt.-Col.

Short Serv. Commissions: Lts. R. S. Vine and J. E. Jameson to be Capts. Capt. L. E. Odlum resigns his commn.

SUPPLEMENTARY RESERVE OF OFFICERS

Capt. R. W. Agnew resigns his commn.

TERRITORIAL ARMY

Col. L. A. Harwood, T.D., from 56th (1st Lond. Div.), is apptd. A.D.M.S., The Lond. Div.

Maj. J. Melvin, M.C. (late R.A.M.C., Militia), to be Maj.

Capt. R. W. Agnew (late R.A.M.C., Supp. Res.) to be Capt.

Capt. C. M. Forbes to be Maj.

To be Bt.-Majs.: Capts. R. W. Gemmell, E. C. Woodhead, J. E. McCartney, and T. F. Arnott.

Lt. R. M. Allardyce to be Capt.

Capt. D. R. W. Burbury relinquishes the appt. of Divl. Adjt. 47th (2nd Lond.) Div. and Sch. of Instn.

Capt. D. C. McC. Ettles, from 56th (1st Lond.) Div., to be Divl. Adjt., Lond. Div. and Sch. of Instn.

Supernumerary for service with the O.T.C.: G. E. Gray (late Offr. Cadet C.S.M., Queen's Univ. Belfast Contgt. (Med. Unit), Sen. Div., O.T.C.) to be Lt. for duty with the Med. Unit of that Contgt.

ROYAL AIR FORCE

Wing Comdr. J. Rothwell to R.A.F. Station, Manston, for duty as medical officer.

Flight Lt. L. Freeman is promoted to the rank of Squadron Leader.

Dental Branch.—Flying Offr. W. V. A. Denney is promoted to the rank of Flight Lt.

INDIAN MEDICAL SERVICE

Col. A. W. M. Harvey to be Maj.-Gen.

Lt.-Col. S. G. S. Haughton, O.B.E., to be Col.

Lt.-Col. B. C. Ashton to be Bt. Col.

The undermentioned officers retire: Col. C. A. Gill and Lt.-Col. J. D. Sandes.

(For New Year Honours in the Services see THE LANCET, Jan. 4th, p. 60.)

COLONIAL MEDICAL SERVICE

The following have been appointed medical officers, West Africa: Dr. G. T. Balean, Dr. D. L. Cran, Dr. C. A. McComiskey, Dr. J. L. McLetchie, and Dr. W. R. Phillipps. Dr. W. T. C. Berry has been appointed medical officer, Nyasaland; Dr. I. T. Dickson, medical officer, Malaya; Dr. J. F. Jarvis, medical officer, Tanganyika; and Dr. F. J. Wright, medical officer, Kenya. Dr. H. J. O'D. Burke-Gaffney becomes senior pathologist, Tanganyika; Dr. H. Fairbairn, sleeping-sickness officer, Tanganyika; Dr. G. Maclean, deputy director of medical services, Tanganyika; Dr. A. Rankine, director of medical services, Trinidad; and Dr. H. C. Towell, medical officer, Uganda.

DEATHS IN THE SERVICES

The death occurred on Dec. 31st, at Caerleon, Monmouthshire, of Lieut.-Colonel WILLIAM ALBERT MORRIS in his 79th year. He was educated at King's College, London, and qualified L.S.A. 1879, L.R.C.P. Edin. 1880. Two years later he joined the R.A.M.C., becoming major in 1894 and colonel in 1902. He served in Burma in 1886–87, and on the North West Frontier (Tirah) in 1897–98. He retired in March, 1912, but was re-employed during the European war. A frequent contributor to the medical press Colonel Morris is best known as editor of the "Treatise on the Transport of Sick and Wounded Troops," written by Surg.-General Sir Thomas Longmore.

CORRESPONDENCE

HYPERVITAMINOSIS D

To the Editor of THE LANCET

SIR,—In connexion with this subject, and Dr. Thatcher's paper thereon in last week's issue of THE LANCET (p. 20), attention may be directed to an investigation by L. L. Madsen, C. M. McCay, and L. A. Maynard on Synthetic Diets for Herbivora, with special reference to the Toxicity of Cod-liver Oil,[1] which may not be generally accessible. Sheep, goats, rabbits, and guinea-pigs were fed on a "synthetic" diet, consisting essentially of regenerated cellulose, starch, sucrose, yeast, salts, and lard, with cod-liver oil. Upon it sheep were reared successfully, goats with moderate success, but rabbits and guinea-pigs with much less success. Eventual failure in the last-named animals, and to a less extent in goats, was caused by the development of paralysis due to degeneration of the skeletal muscles, fatty liver being a constant finding in all species. It was demonstrated that the cod-liver oil was the chief causative agent in production of the lesions. It was found that for sheep and goats a daily intake of 0·7 g. of oil per kilo of live weight caused death within 93 days, 0·35 g. within 226 days, and only when the oil ration was reduced to 0·1 g. was no ill-effect produced.

The authors state that, while furnishing no evidence applicable to the human species, the results should serve to re-focus attention on the reports of Agduhr. Mouriquand and Michel[2] have also reported a relationship between cod-liver oil intake and the development of scurvy, the oil apparently in some manner "antagonising" the vitamin C. Cod-liver oil may not, therefore, be the entirely innocuous substance it is generally supposed to be.

I am, Sir, yours faithfully,

Greenwich, S.E., Jan. 4th. R. TANNER HEWLETT.

"MORBUS BRITANNICUS"

NEW LABELS AND LARGE TEXT-BOOKS

To the Editor of THE LANCET

SIR,—Bearing in mind that text-books of medicine now run to a couple of thousand pages, cost a couple of pounds, and become "out of date" every three or four years, I read with gloom of Dr. Kofoed's new "morbus Britannicus" which he describes in your last issue. Surely Dr. Kofoed has only described the signs and symptoms of acute vagotonia, which in this case is of occupational origin, occurring in stokeholds and ships' galleys for the most part. Such a well-known syndrome could scarcely be called a new specific disease; nor, in my opinion, can it be termed Britannic, since I have seen at least one very acute case amongst Chinese firemen, in four voyages to the East as ship's surgeon. The ætiology as given in the note would seem to be indefinite: in my case the weather was calm but very hot, and the men were of good physique, neither starved nor given to excesses (at sea), and with only their normal lues infection. I have yet to learn that a salt-free diet can excite such fulminating symptoms, but if this is so then this cause did not operate, for these men ate plenty of salt meat, and especially salt pork, every day. Possibly some sudden deficiency in water absorption is a more probable explanation, with cerebral and medullary stasis. The late Prof. W. E. Dixon was wont to remark that the blood was geared for albumin, sugar, and salts. It is not, however, geared for water, especially during heavy labour in stokeholds and galleys, with great loss of body fluid.

Dr. Kofoed mentions some of the other causes of the acute vagotonic syndrome, but others also are well known—psychical, inflammatory, reflex, and toxic—as in some cases of death in the first stage of chloroform anæsthesia, in which the patient may die of vagal cardiac inhibition, like a dog. Vagotonia varies in degree from the stage fright of the European actor or examinee to the ascaris-excited acute abdomen of, for example, the North Borneo Murut. The ascaris, indeed, is an important cause of the acute syndrome in the tropics, a cause which Dr. Kofoed does not mention. The syndrome is as classical as that of inflammation itself: bradycardia followed by tachycardia; colic followed sometimes by diarrhœa; pallor; sweating; constriction of the pupil followed by dilatation; spasms of voluntary muscles with some rigidity of the recti which may later become board-like; nausea and possibly vomiting. The spasms may be due to an extension of the excessive stimulation to the voluntary musculature. The diagnosis of the cause is facilitated by giving hypodermically a full dose of atropine (gr. 1/50), or better by washing atropine into the veins. This procedure quickly relieved the acute stokehold cramps and colic, but would have less effect when there is some continued peripheral stimulation. Hot salt baths relieve by the action of heat only, and, of course, no salts are absorbed from water through an oily epidermis.

Would it not simplify medicine if certain unnecessary and confusing labels were now discarded, and if new labels were reserved for new specific diseases, and then only given after a long probationary period? Could one, in conclusion, dare the opposition of publishers, and plead for a standard loose-leaf text-book of practical medicine, compiled and revised annually by the most authoritative committee of international expert physicians, to enable us more easily and at less expense to see the true growth of medicine in its proper perspective?

I am, Sir, yours faithfully,

London Fields, E., Jan. 6th. A. J. COPELAND.

SYPHILITIC ANÆMIA OF PERNICIOUS TYPE

To the Editor of THE LANCET

SIR,—In your last issue (p. 24) Dr. C. R. Box and Dr. A. M. Gill report an instance of severe anæmia of the pernicious type associated with, and apparently due to, an active syphilitic infection in an adult; and they remark on the rarity of such cases. It is certainly difficult to understand why, if syphilis can produce such a condition, more is not known of it. I felt the force of this dilemma some three years ago in the case of a child of 5 years old with a strongly positive Wassermann reaction and a comparatively severe hyperchromic anæmia. Rapid recovery occurred with no medication other than mercurial inunction. As there was no evidence to suggest the presence of a hæmolytic anæmia undergoing spontaneous recovery, it was tempting to presume that the anæmia was due to poisoning of the bone-marrow by the syphilitic infection. I could, however, find no analogous instances in the literature, and at a gathering of a dozen pædiatric

[1] Cornell University Agricultural Experiment Station, Memoir 178, June, 1935 (Ithaca, New York).
[2] Compt. rend. Soc. Biol., 1922, lxxiv., 1170.

physicians no one could recall having seen a similar case. The following is a brief account of the case :—

A girl, aged 5 years, was brought to the Paddington Green Children's Hospital for pallor which was said to have been getting rapidly worse for three weeks. She was admitted owing to her anæmic appearance. On the day of admission her father gave the information that he had had syphilis and that the patient, when an infant, had had a short course of treatment for the same disease. The girl was well-grown and well-nourished, and showed no stigmata of congenital syphilis. Her complexion was very pale, showing no bronzing of the skin, and her blood-serum showed no icteric tinge. Her blood W.R. was strongly positive. The liver and spleen were not enlarged. The red blood-cells numbered 2,150,000; hæmoglobin, 50 per cent.; colour-index, 1·16; and the white count was 8500 with a roughly normal differential count. The film showed marked poikilocytosis, anisocytosis, and polychromasia; there were a few nucleated red cells.

In this case no treatment was given except the inunction of a drachm of blue ointment daily. In ten days time the red cells had increased by over a million, and the hæmoglobin by 30 per cent. Reticulocytosis amounted to 3·4 per cent. At the end of three weeks' treatment the red cell count was 4,420,000, and the hæmoglobin was 95 per cent. The appearances of the blood film were those of normal blood.

I am, Sir, yours faithfully,

London, W., Jan. 4th. REGINALD MILLER.

AGRANULOCYTOSIS

To the Editor of THE LANCET

SIR,—I am much interested in the article on agranulocytosis by Goadby, Worster-Drought, and Dickson in THE LANCET of Oct. 26th, 1935. The occurrence of meningitic symptoms, with changes in the cerebro-spinal fluid in this condition, recalls to my mind a similar condition reported four years earlier (New Eng. Jour. Med., 1931, ccv., 1238) by W. Dameshek and myself. This was the first report of central nervous system changes in a typical case of so-called infectious mononucleosis. Since then two other cases of a similar nature have been called to my attention: one reported by A. H. Johansen (Acta med. Scand., 1931, Fasc. 3, lxxvi., 269), the other reported to me personally this fall by Dr. Edwin M. Cole from the Massachusetts General Hospital.

It was stated in my original communication that changes in the cerebro-spinal fluid occur simultaneously with the cerebral and meningeal symptoms of certain internal diseases. Further, it was emphasised that symptoms referable to the central nervous system occur in the blood diseases, such as the leukæmias and infectious mononucleosis. The close parallelism between the cellular changes in the cerebro-spinal fluid and the changes in the leucocyte counts in the latter case was considered to be significant. It was also mentioned that there might be a close relationship between this disease and the syndrome variously called aseptic, epidemic, and acute lymphocytic meningitis.

During the past few years considerable interest has been shown in the literature in lymphocytic meningitis, as well as other obscure central nervous system infections. This was stimulated by the work of Armstrong (Pub. Health Rep., 1934, xlix., 1019), and of Rivers and Scott (Science, 1935, lxxxi., 439), which indicates that a filtrable virus is the causative agent of acute lymphocytic meningitis. These experimental investigations tend to show that this disease is a clinical entity.

Whether or not this is a fact remains to be seen. However, it was stated in my original article that "the concept of an aseptic meningitis is at best a vague one and almost as all-inclusive as the term encephalitis." The concept was emphasised at that time that these conditions were symptomatic of some generalised systemic disease. The article by Goadby and Worster-Drought illustrates again the familiar phenomenon of the association of central nervous system changes with systemic disease. The ætiology of agranulocytosis as well as of infectious mononucleosis is of course unknown. However, from the standpoint of the cerebral manifestations, which apparently may occur in both diseases, a fairly close relationship may be seen. It is conceded, nevertheless, that the report concerning the case of agranulocytosis is indicative of a chronic infection of the central nervous system, whereas my original case of infectious mononucleosis dealt with an acute cerebral disorder.

While it may be true that this report on agranulocytosis is unique in the literature, it seems to me that the crux of the whole situation lies in the larger concept of various systemic diseases of known and unknown ætiology, giving rise to changes in the central nervous system.

I am, Sir, yours faithfully,

SAMUEL H. EPSTEIN.

Harvard University Medical School, Dec. 23rd, 1935.

THE UNDESCENDED TESTICLE

To the Editor of THE LANCET

SIR,—We read with interest Mr. Denis Browne's letter in your issue of Dec. 28th, in which he suggested that there are two distinct types of undescended testes: (1) those suffering from a delay in development, which would be suitable for hormone treatment, and (2) those suffering from a congenital deformity, in which hormone therapy is contra-indicated and which are amenable only to surgery. The hormone treatment of undescended testes being at present only in the experimental stage, such suggestions are indeed of value.

It appears that one of Mr. Browne's criteria for classing a case as congenital deformity in which hormone treatment should not be undertaken is the presence of a hernial sac. Of the 9 cases which he quotes from our series as being unsuitable for hormone treatment for this reason, three (Nos. 14, 17, 20) had no detectable hernia before treatment and the testes descended successfully into the scrotum. Hernias developed during treatment, and operation will now be required for their relief. Of the remaining 6 cases which were unsuccessful, 3 (Nos. 9, 28, 29) had palpable hernia before treatment and 3 (Nos. 27, 30, 31) had not; thus the absence of a hernia does not necessarily indicate that the result will be successful. Nor is the failure to palpate the testes a sign that hormone therapy will be unsuccessful; in three of the cases under discussion (Nos. 27, 28, 29) the testes were not palpable and the result was unsuccessful; but in patient No. 1 both testes were impalpable and a successful descent of both testes was obtained.

It would seem then that Mr. Denis Browne's suggestions do not get us much farther. We hope, however, that further experience of hormone therapy will disclose more definitely the type of case suitable and the type unsuitable for the treatment.

We are, Sir, yours faithfully,

A. W. SPENCE,
E. F. SCOWEN.

Dunn Laboratories, St. Bartholomew's Hospital and College, E.C., Jan. 4th.

PURKINJE'S EIGHT-RAYED STAR

To the Editor of THE LANCET

SIR,—If on awaking in the morning the eyes be closed and covered with the hands the centre of the field of vision will appear alternately as light or dark in accordance with its sensitisation from the periphery. If when the disc is light it be observed very carefully there will be seen in it a black eight-rayed star (✱) similar to an astigmatic clock. The centre of the star is the centre of the field of vision. This corresponds to the eight-rayed star seen by that minutely accurate observer, Purkinje, by intermittent light and pressure on the eye. It has been very generally neglected, probably because of its artificial appearance. One of the main rays is vertical and another horizontal.

I am, Sir, yours faithfully,

F. W. EDRIDGE-GREEN.

Board of Trade, S.W., Jan. 2nd.

MEDICAL EDUCATION AND BLOOD EXAMINATION

To the Editor of THE LANCET

SIR,—This is an age of mechanisation, the individual is being superseded by the machine, and individualism in medicine is being submerged by specialism and team-work. This is no doubt a natural and rational development, owing to the great advance in medicine and its allied sciences during recent years. It is impossible for any individual to keep in touch with every modern development in its relation to medical practice, and the student of the present day has come to rely upon a multitude of counsellors—the pathologist, the bacteriologist, the biochemist, the radiologist, &c.—for a diagnosis.

The great majority of students however are destined for general practice, and many may find themselves isolated in country districts, where the props upon which they have hitherto relied are not readily accessible, and they have to depend upon their own resources. Does the clinical training at the medical schools supply all the requirements of the general practitioner? The average doctor, when examining a medical case, takes the temperature, counts the pulse, perhaps looks at the tongue, listens with the stethoscope to the heart sounds and the respiration, possibly takes the blood pressure, and, if there seems to be a special reason, examines the urine for albumin or sugar. If any further investigation is required, the patient is referred to a specialist. He certainly does not examine the blood, and yet the diagnostic value of a blood examination cannot be overestimated. Without a satisfactory blood examination the diagnosis of the large class of blood diseases, which are frequently met with in practice, is impossible, and in some conditions, which are fortunately comparatively rare, such as agranulocytosis and pernicious anæmia, the patient's life may depend upon early diagnosis and prompt treatment.

Leucocyte counts, total and differential, are of assistance in the diagnosis of acute infections, and additional information can be derived from the Arneth count, an infection of any kind, whether accompanied by leucocytosis or not, being associated from its beginning with a "shift to the left." In addition to this, the leucocyte count is a valuable guide in prognosis, and gives an indication of the course of the disease and its response to treatment, the necessity for operative interference in pyogenic infection, and the prospect of recovery. It is no exaggeration to say that there is no other method of clinical examination by which so much valuable information can be derived.

The technique of blood examination is simple and easily acquired. No elaborate equipment is needed: a microscope—preferably with a mechanical stage—a hæmocytometer, a hæmoglobinometer, slides, and a few stains, are all that are necessary. The process is interesting, even fascinating, and with practice a complete examination need not take much more than an hour. Why should not students be taught to use this method of clinical examination as a routine? Clinical clerks might be required to supply a record of the blood picture in their notes in every case for which they are responsible.

I am, Sir, yours faithfully,

Worthing, Jan. 1st. HERBERT H. BROWN.

DUODENAL ULCER TREATED WITH HISTIDINE

To the Editor of THE LANCET

SIR,—The following case may be of interest to your readers.

The patient, a Moslem, aged about 30, reported to me on Jan. 30th, 1935, with "chronic dyspepsia," stated to be of six years' duration. His history was typical of that of a duodenal ulcer. I had the patient radiographed for a barium-meal series on March 4th, and the duodenal cap showed an ulcer crater, which persisted after the stomach had emptied. From Jan. 30th to June 7th I treated him with alkalis and a gastric diet, without any improvement; if anything his "hunger pains" were getting worse. On June 8th I started him on a course of 24 daily intramuscular injections of histidine, using Hoffmann-La Roche's Larostidin, put up in 5 c.cm. ampoules. The injections are practically painless. After the fifth injection the patient stated that his hunger pains had disappeared, so I told him he could try whatever diet he fancied. The next day his gratitude seemed unbounded, as he said he was able to have a good square meal for the first time without any discomfort whatever. Since then he has eaten a normal diet and not had any trouble, except some flatulence occasionally.

In my opinion this case deserves special attention in view of the long history, the distinct pathological state of his duodenum, as seen in the skiagram, and the quick relief obtained, which up to now (nearly six months afterwards) seems a permanent cure. I had the patient radiographed again by a barium meal series on Dec. 4th and there is no evidence whatever of the previous ulcer. My thanks are due to Dr. P. A. Pierce, radiologist of the Ripon Hospital, without whose help I should not have been able to obtain the evidence of ulcer and the results of the treatment. I am, Sir, yours faithfully,

Simla, India, Dec. 19th, 1935. A. H. BARTLEY.

THE BRIGHTNESS OF THE POST OFFICE MESSENGER

To the Editor of THE LANCET

SIR,—In your leading article of Jan. 4th on the Marriage of Public Health and Agriculture you state incidentally that "H. H. Bashford reports that Post Office messengers get bigger (though not necessarily brighter) from year to year." I think it should be made clear that the words between parentheses are editorial and not mine. From a long personal experience, I have an extremely high opinion of the brightness of the average Post Office messenger.

I am, Sir, yours faithfully,

H. H. BASHFORD,

Jan. 4th. Chief Medical Officer, G.P.O.

*** We have the same opinion, and the interpolated words are no contradiction of it, taken in their context.—ED. L.

AMMONIUM CHLORIDE AS A DIURETIC

To the Editor of THE LANCET

SIR,—In their paper on "A Mercurial (Novurit) Suppository as a Diuretic for Cardiac Œdema" (THE LANCET, Jan. 4th) Dr. Parkinson and Dr. Thomson also discuss the use of ammonium chloride as an adjuvant and mention that "there is difficulty in disguising its salty taste." This difficulty as well as the other drawback frequently seen with the use of ammonium chloride in the ordinary form—viz., the occurrence of digestive disturbances—have been overcome by the introduction in 1930 of a preparation called Gelamon, which has been prepared by Halpern under the auspices of Saxl and Erlsbacher and which contains the ammonium chloride in a special form. The main features are the adsorption of ammonium chloride on gelatin which is then hardened in formalin. When given in this form not only is the taste of ammonium chloride effectively disguised but also there is scarcely any incidence of indigestion, as gelamon is not, or only to a negligible extent, decomposed n the stomach. Since its introduction it has been used on a large scale in the First Medical Clinic of the University of Vienna, and on the ground of what I have seen in that hospital as well as in my private practice I can recommend it.

Gelamon is manufactured as pastilles, each containing 0·4 g. of ammonium chloride; 15 pastilles daily and spread over the day should be given (preferably after meals) during the 48 hours preceding the administration of the mercurial diuretic, during the day of the administration, and in some cases also during the first day following the administration. Our observation has been that not only can a considerable increase in the diuretic effect be obtained, but that also cases which did not respond to the administration of a mercurial diuretic or had become refractory may become responsive by means of the use of gelamon in the way indicated.

I have been in communication with the makers of gelamon for the last few months and understand that gelamon will be obtainable in this country shortly. I am, Sir, yours faithfully,

Wimpole-street, W., Jan. 6th. A. SCHOTT.

AN ALUMINIUM KETTLE

To the Editor of THE LANCET

SIR,—Might I suggest to Dr. Elwell, whose letter appeared in your issue of Dec. 28th, that he should refer to a monograph I wrote in 1931, entitled the "Danger of Food Contamination by Aluminium," published by Messrs. John Bale, Sons and Danielsson, Ltd. In this he will see that I emphasised "stiffness" as one of the most frequently recurring symptoms of aluminium artificially introduced into the system, and that I found this specially affected the back of the neck and head—similar symptoms, in fact, to those he describes in his patient. In the last five years, during which I have been working intensively on this subject from the clinical point of view, I have traced these symptoms in so many patients to aluminium that I can definitely assure Dr. Elwell that this metal was responsible in his particular case.

I am, Sir, yours faithfully,

R. M. LE HUNTE COOPER.

Harley-street, W., Jan. 6th.

*** Dr. Elwell's patient, who suffered from stiffness and pain in the back of the neck and head, had been in the habit of drinking daily some eight to ten breakfast cups of tea, the water for which was boiled in an aluminium kettle; and the symptoms ceased when the kettle was no longer used. Dr. Le Hunte Cooper is satisfied from similar experience of his own that aluminium was responsible in Dr. Elwell's case, and he refers to a monograph which he wrote four years ago. At that time we found it difficult to attribute the groups of symptoms he described to the use of aluminium cooking vessels, especially as the work of the American authors whom he quoted in support of his deductions was not confirmed either in the U.S.A. or in this country. Dr. G. W. Monier-Williams, reviewing the subject last year for the Ministry of Health, agreed that there may be individuals who are susceptible even to small doses of aluminium, but found no conclusive evidence that this is so.—ED. L.

BRITISH POSTGRADUATE MEDICAL SCHOOL

THE organisation of the British Postgraduate Medical School provided for a dual teaching staff. There was to be a permanent and whole-time staff, usually referred to as "A staff," and a visiting and part-time staff referred to as "B staff." "B staff" were either to deliver courses of lectures or to take charge of wards for such periods as could be arranged. With the exception of a few lectures in the refresher courses, the whole work of the school since it began has been carried on by "A staff."

With the beginning of the New Year a start will be made with the appointment of members to "B staff." To some extent the method by which the services of "B staff" can be utilised is at present experimental. It will be extended or altered in the light of requirements.

In the *department of medicine* Lord Horder has agreed to take charge of a ward for a period of ten weeks from Feb. 1st. During this period he will direct the work of the ward with the assistance of the permanent staff, and will conduct two teaching clinics weekly. He will be succeeded by Lord Dawson, who has consented to take charge of beds from May 1st to July 15th. These clinics will be held on Wednesdays and Fridays from 2–4 P.M. In addition, the following courses of lectures have been arranged. Commencing on March 2nd Dr. Gordon Holmes, F.R.S., will give a course of lectures on cerebro-spinal syphilis. Subsequent courses of lectures are to be given by Dr. W. S. C. Copeman on arthritis, and Dr. R. A. Young on non-tuberculous pulmonary diseases.

In the *department of surgery* Prof. E. W. Hey Groves will commence a series of lectures and demonstrations on fractures on Feb. 7th. These lectures will be given on Fridays commencing at 2.30 P.M. Later in the session Sir James Walton will lecture on the surgical treatment of dyspepsia, Sir Henry Gauvain on surgical tuberculosis, and Mr. Tudor Edwards on thoracic surgery. Each course will consist of about six lectures and will include some practical work as well as demonstrations of cases and of methods of treatment. During the course on surgical tuberculosis visits will be paid to Alton and Hayling Island. Full details of these courses will be published later.

During the absence of Prof. G. Grey Turner at the International Surgical Congress in Cairo Sir Thomas Dunhill and Prof. G. E. Gask are in charge of the surgical wards and the clinical instruction of the school.

Colonel L. W. Harrison has been appointed honorary consultant in venereal diseases at the school.

ROYAL INFIRMARY, BRADFORD.—The board of management intend in the near future to institute a dermatological department at the New Royal Infirmary, Bradford, in connexion with which a new appointment of dermatologist will be made.

INTERNATIONAL SOCIETY OF SURGERY

CAIRO: DEC. 31ST, 1935, TO JAN. 4TH, 1936

(FROM A CORRESPONDENT)

THE eagerly anticipated Tenth Congress really began when two large parties of members embarked on the *Champollion* and the *Mariette Pacha* at Marseilles on Boxing Day. To make contact with friends of other nations, to get to know those whose names are notable in surgery, and to discuss informally problems of mutual interest, is one of the most useful functions of gatherings of this sort; and as sailing conditions were ideal, the opportunity was fully used. In addition a certain amount of committee work was undertaken by the official delegates during the voyage.

The morning of the 30th found us landing at Alexandria, where the British Fleet lay at anchor in the bay. Here our Egyptian hosts took charge of us, and the sight-seeing included a visit to the great new Hôpital Roi Fouad I, situated on the confines of the town and overlooking the Mediterranean. Built of native stone with lavish use of marble, it is after the plan of the Martin Luther Hospital in Berlin and provides for 450 beds, of which 150 are for paying patients. Each of the six floors is painted a different colour and all the wards have hot and cold water, telephones, and wireless. Each of the ward floors has its operating suite with some novel features; but these scarcely seemed to compensate for the poor lighting arrangements. It was interesting to notice that most of the sanitary fittings and equipment had been supplied by British firms. The nurses are all German and everything was spotless.

At Cairo the arrival of about 340 visitors all at the same time rather taxed the resources of some of the hotels, but by midnight most troubles had been smoothed out, lost luggage was restored to rightful owners, and calm reigned once more. Between 8 and 9 next morning the bureau of the Society at the Medical Faculty was besieged and when registration was completed it was found that 392 congressists, not including those from Egypt, were in attendance. With the notable exception of Italy nearly every country in Europe was represented, and there were members from as far afield as Australia, South America, Canada, Malaya, Japan, and China. The Russian Government sent five interested and active members with Dr. Limberg as delegate and leader. One of the members from Finland was on his way to join a Red Cross unit in Abyssinia. Seven members made up the British contingent, while Mr. Gordon-Taylor was expected, en passant, on his way home from the primary fellowship examination in India. Everyone regretted the absence of Prof. Anton von Eiselsberg, who had to forego the presidency for reasons of health.

AN UNCEREMONIOUS OPENING

On the morning of Tuesday, Dec. 31st, the Congress was officially opened in the great hall of the University at Guizeli. This is situated some little distance out of the city and is a beautiful and spacious auditorium which had been finished only the previous evening. As one approached the grand entrance it was obvious that something unusual was astir, for the vicinity was besieged by hundreds of students distinguished as much by their excitement and volubility as by the picturesque tarbush which they all wear. A sort of catafalque, erected to the memory of students killed in the recent riots, had been erected just in front of the entrance, and this was the centre of most of the excitement. Early comers reached the hall without much trouble, but late arrivals were considerably jostled and some of the less robust visitors were alarmed. Later the demonstration became noisy; tremendous shouting greeted all new-comers; cars were boarded and the occupants harangued with cries of "Down with England," "Egypt for the Egyptians," &c. Inside the hall while the delegates were assembling on the platform there was an extraordinary incident. A student carrying a large coloured photograph of the students previously killed in the riots mounted the platform and holding the photograph at arm's length called for a two minutes' silence, and then exhorted the large body of students inside the hall who shouted and cheered. It struck the visitors as remarkable that all this was allowed to take place without the slightest interference from the police or officials of any sort. Eventually Prince Mohamed Aly Hassan with his suite arrived and occupied the Royal Box, after which the ceremony was allowed to proceed without much interruption, although the departing guests, and especially those on foot, had to run the gauntlet amid a vociferous mob yelling and shouting.

But these incidents did not upset the Congress in any way. As president of the organising committee, the Minister of Public Instruction welcomed the visitors in an appropriate speech in French, which was thoughtfully circulated in that language and in Egyptian. ALY IBRAHIM Pasha spoke as the dean of the faculty, while Dr. VERHOOGEN (Brussels), chairman of the international committee, Prof. DE QUERVAIN (Berne), past-president, Dr. MAYER (secretary-general of the Society), and Dr. SCHOEMAKER (The Hague), the president, all made speeches outlining the work and the activities of the Society.

SURGERY OF THE PARATHYROIDS

After the excitement of the morning the first scientific session, held at two o'clock in the afternoon, was somewhat of a relief. The subject was the surgery of the parathyroids, and the reports of the openers BINET (Paris), BAUER (Breslau), and BRAINE and CHIFOLIAN (Paris) were succinct and admirable. Among the supporters LERICHE (Strasbourg) contrasted operations on the parathyroids with those on the sympathetic, and also referred to the importance of the possible consequences from interference with the blood-supply of the glands. His remarks were received with acclamation. JIRASEK (Prague) and HABERLAND (Cologne) made suggestive contributions, and HUSSEIN (Cairo) focused on the difficulty of the subject by comparing the problem with that of the nine blind men describing the elephant! PERERA Y PRATS (Madrid) suggested that in Recklinghausen's disease of bone removal of the parathyroid was definitely indicated, in scleroderma it was useless, in polyarthritis it was of very doubtful value, while in Glénard's disease and muscular asthenia it was to be considered on its trial. In this discussion PLOTKIN (Moscow) also took part.

THE SURGICAL SIGHTS OF CAIRO

On New Year's morning visits were paid to the departments of the medical school and to the hospitals. Among the former the anatomical and the pathological departments were found most interesting. Prof. Bernard Shaw is developing a very complete department in pathology with many new features. From about 200 autopsies a year he is building up complete reports with preservation of the naked-eye specimens and histological slides all

indexed and filed for subsequent study. The museum of the department is already wonderfully complete, and the series of case specimens and specimens with clinical, X ray, and microscopical records was of great teaching value.

The work in the operating theatres of the Kasr-el-Aini Hospital was varied and interesting. Egyptian surgeons have a unique experience of splenectomy and of the complications of bilharzia. Examples of both conditions were dealt with skilfully and with proper restraint. The frequency of the Egyptian splenomegaly is almost certainly due to intestinal infection which is very common in this country. The results have much improved since it has become the practice to spend three or four weeks in preliminary treatment and to operate only when the enlarged spleen is an encumbrance and danger from its size and liability to injury. In one series of several hundred operations the mortality was 12 per cent., and in a recent consecutive series of 30 cases there was no death. One surgeon at another hospital carried out six splenectomies the same morning. Silk or linen thread is used for the pedicle. Provided that concomitant disease has been conquered the late results are very encouraging.

The Kasr-el-Aini Hospital is really a fifteenth century building which for many years was the palace of the governors. After the conquest of Napoleon it was made into a hospital with Baron Larrey as chief surgeon. In recent years it has been altered and renovated, and with its 1500 beds it serves the purposes of a modern hospital very well. The wards are clean and bright, and the thick walls of the old palace and the wide central corridors help to keep them cool in summer. To the visitor unaccustomed to Eastern conditions the way in which the patients squat on the beds and other unusual attitudes are rather remarkable, but they seemed wonderfully content and we were informed that they make good patients and, generally speaking, put up an excellent resistance at least to operations and traumatisms. The senior nurses are all British-trained, but an additional nursing staff of Egyptian girls is being recruited. The new hospital on the Island is making rather slow progress, but the new out-patient department is now complete and is remarkably efficient. It deals with enormous numbers and on the day before our visit there were 3457 attendances of which over 800 were new patients.

LUMBAR SYMPATHECTOMY

On Thursday the scientific session began just after 8 A.M., the subject for discussion being lumbar sympathectomy. BRAENCKER (Hamburg) gave an excellent presentation of the anatomy, illustrated by some beautiful slides. LERICHE (Strasbourg) followed, and his well-known interest in this subject led him to treat of the related pathology of occlusive arterial diseases. GONZALÈS AGUILAR (Santander) suffered from the fact that few of the congressists seemed to understand Spanish. YOUNG (Glasgow) made a plea for the consideration of periarterial sympathectomy in properly selected cases, and LAMBERT ROGERS (Cardiff) made an effective contribution on clinical and anatomical grounds. Many of the speakers quoted experimental work in which arteriography had played a useful part.

There were so many communications that the discussion had to be postponed until Saturday afternoon.

SURGERY OF THE COLON

Friday's discussion was opened by CORACHAN (Barcelona), GREY TURNER (London), SOUPAULT (Paris), and SCHOEMAKER (The Hague). There were no less than 52 names down as subsequent speakers, but, perhaps fortunately, only 19 actually turned up. For the most part the openers gave a general review of the subject, reflecting the practice of their several countries. There seemed to be unanimity about the wisdom of a suitable regimen for uncomplicated diverticulosis, operative treatment being reserved for the complications. DE QUERVAIN (Berne) caused amusement by suggesting that diverticulosis seemed peculiarly liable to occur in diplomats! JIRASEK (Prague) spoke in excellent English and made his points very clearly. He stated that in non-malignant disease a permanent spasm of the distal part of the bowel was prone to follow an unphysiological colostomy. HABERLAND (Cologne), speaking in German, was equally explicit, and drew attention to a new form of suture for the colon. SHELTON HORSLEY (Richmond, Va.) showed some interesting lantern slides. He stressed the value of multiple stage operations in colonic resection, and spoke of the use of continuous intravenous infusions of 5 per cent. dextrose in Ringer's solution and the preliminary use of vaccines. LEVEUF (Paris) gave a clear exposition of the value of colectomy for aggravated colitis, and reported some very good results. FINSTERER (Vienna) was listened to with great attention while he related the results of a fine series of partial colectomies which he had carried out for spastic and other conditions of the great bowel. The results of hemisection, whether right or left, had been most satisfactory, but total colectomy had proved dangerous and unsatisfactory in his hands. One speaker (GREY TURNER) hit upon the idea of projecting short epitomes in the French language under each of his headings—these were interspersed between ordinary slides showing specimens, and seemed to be a satisfactory method of overcoming some part of the language difficulty.

THE END OF THE CONGRESS

On Saturday, from 8 to 12, we are promised a full programme of lantern demonstrations and the like under the auspices of a special meeting of the Egyptian Medical Society. The afternoon, from 2 to 6, is reserved for presentations and reports on bilharzia by ALY IBRAHIM Pasha, dean of the medical faculty, and NAGUIB MAKAR, both of Cairo, and a large number have signified their intention to take part in the discussion. As though that were not enough any discussion postponed from previous sessions is then to be dealt with!

Our hosts have been most hospitable, and every night save one there have been banquets or receptions. The banquet of closure on Saturday, given by the Egyptian surgeons, will really be a welcome end to a strenuous though happy and useful week.

The social side of the Congress has been well arranged, and besides the evening functions, like the President's reception at the magnificent Palace Hotel in Heliopolis, trips on the Nile to the Barrages of the Delta and, of course, an excursion to the Pyramids, were thoroughly enjoyable. All the "sights" of Cairo seemed to be open on presentation of the membership card, and we were met by kindness and cordiality on every side. All who participated in this successful congress must be grateful to Dr. Aly Ibrahim Pasha and his able secretaries, Dr. M. Khalil Bey and Dr. M. Kamel Hussein.

WORK OF THE INTERNATIONAL SOCIETY

There have been long meetings of the international committee to discuss several problems connected

with the future of the Society. The propositions put forward were to create associate members with all the privileges of the Society but without voting power up to 50 per cent. of the titular members of each country, and to establish a journal to be published every two months in order to keep up the interest of the members in the affairs of the Society between the triennial meetings. On account of the fall in value of the franc the subscription for future members is to be raised to 450 Belgian francs. These propositions were later brought before the general assembly and adopted—but not without some opposition regarding the new journal, because many members felt that there were already more than enough.

Invitations for the next congress were received from Russia, Switzerland, and Austria, and it was eventually decided to hold the next congress in Vienna in 1938 under the presidency of Dr. Rudolph Matas of New Orleans. Prof. Sauerbruch (Berlin) and Dr. Hybbinette (Stockholm) were elected vice-presidents, while the re-election of the treasurer, Dr. Lorthioir, and the urbane and indefatigable secretary, Dr. L. Mayer, were received with acclamation. The subjects selected for discussion at the next congress were (1) the surgery of arterial hypertension, (2) bone-grafting, and (3) tumours and cysts of the lung.

The name of Prof. Lambert Rogers, of Cardiff, was added to the British committee.

PUBLIC HEALTH

Grading of Milk by the Total Bacterial Count

IN the *Medical Officer* of Dec. 28th Dr. J. B. Howell writes of the unreliability of grading milk according to the total bacterial count and the test for coliform organisms. He finds that if he sends identical samples to different laboratories for total bacterial counts the reports are often quite different. In one extreme case (already quoted in our columns 1934, ii., 1074) two identical samples sent to the same laboratory produced counts of 147,300 and 3,400,000 per c.cm., while a different laboratory receiving a third sample reported that the content was only 9270 per c.cm.

Anyone with experience of total bacterial counts on milk will not be much surprised at such results; it is common knowledge that the total count technique, which is based upon the unwarranted assumption that every colony originates from a single organism, is full of pitfalls. But Dr. Howell is hardly being fair when he assumes that variations in count are due to the failure of bacteriologists to "faithfully and carefully carry out the suggested procedure." The factor which probably has most effect on the bacterial content of milk is the state of the weather, which is altogether outside the bacteriologist's control. In hot weather bacteria grow extremely rapidly in milk, and unless samples are transported from the sampler to the laboratory packed in an efficient ice-box there may be big variations in bacterial growth within a short period of transit, depending upon the different temperatures attained. Apart from considerations of temperature, it is extremely hard to standardise a test of this type. There are mechanical faults such as errors in the graduation of pipettes to be controlled; there are the difficulties of standardising culture medium prepared from such variable constituents as meat and peptone; and there is a difficulty to which Dr. Howell draws attention—that of breaking up cell aggregates in the milk. This is attempted by shaking the sample in a bottle; but it is impossible to disintegrate all clumps and chains of organisms suspended in milk, and any endeavour to standardise the degree of disintegration by standardising the amount and method of shaking will achieve but slight success. Finally, in preparing total counts the failure of the human element plays an important part, both during the various manipulations and in the final counting. However well-trained and conscientious laboratory technicians may be, their errors cannot be reduced to a level at which they can be ignored.

Undoubtedly there are strong grounds for agreeing with Dr. Howell that little reliance can be placed upon a report of the bacterial content of a milk when judging the grade or quality of a sample. Comparison of a series of counts made at frequent intervals enable one to form a reasonable estimate of the standard of cleanliness under which the milk has been produced, but the results of a single test are usually worthless.

Generally speaking, two fundamental objections can be levelled against the present method of grading milk. The one is based upon the inherent inaccuracies of the total count; the other is that owing to the laboratory accommodation necessary, and the high degree of technical skill required, for performing the count a very definite economic limit is set to the number of times an individual milk-supply can be tested in the course of a year. Obviously, therefore, an improved method of grading milk depends not upon improving or elaborating the technique of the total count, but rather upon devising a test simple and cheap enough to be applied to an individual supply of milk—daily if need be—and one which eliminates some of the above inaccuracies.

We may look for some further light on choice of technique when Prof. G. S. Wilson's expected report is issued. In the meantime reference should be made to the method of judging the quality of milk for pasteurisation, which was first suggested by Anderson and Meanwell,[1] and is also advocated in a report by Scott and Wright[2] which has just reached us. Bacterial counts are made of the milk before and after pasteurisation and the results are correlated, attention being chiefly paid to the post-pasteurisation count. It has been shown that while the pre-pasteurisation count is largely influenced by weather conditions and may be a very unreliable index of the hygienic conditions of the farm, the post-pasteurisation count of heat-resistant organisms depends largely upon the cleanliness of production, these organisms coming mainly from badly sterilised apparatus.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 28TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2052; diphtheria, 997; enteric fever, 20; acute pneumonia (primary or influenzal), 1076; puerperal fever, 35; puerperal pyrexia, 72; cerebro-spinal fever, 14; acute poliomyelitis, 8; encephalitis

[1] Anderson, E. B., and Meanwell, L. J.: Jour. Dairy Research, 1933, iv., 213.
[2] Scott, A. W., and Wright, N. C.: Hannah Dairy Research Inst. Bull., No. 6, 1935.

lethargica, 5; dysentery, 33; ophthalmia neonatorum, 42. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Jan. 3rd, 1936, was 3728, which included: Scarlet fever, 1164; diphtheria, 1212; measles, 315; whooping-cough, 465; puerperal fever, 19 mothers (plus 14 babies); encephalitis lethargica, 279; poliomyelitis, 3. At St. Margaret's Hospital there were 14 babies (plus 5 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox or enteric fever, 39 (3) from measles, 4 (1) from scarlet fever, 26 (7) from whooping-cough, 40 (6) from diphtheria, 59 (20) from diarrhœa and enteritis under two years, and 80 (14) from influenza. The figures in parentheses are those for London itself.

The mortality from influenza, of which the total has begun to rise, is scattered over 47 great towns, Liverpool reporting 5, Manchester 4, Bolton and Leicester each 3, no other great town more than 2. Liverpool reported 15 deaths from measles, Manchester 7, Warrington 3. Liverpool also had 5 deaths from whooping-cough. The deaths from diphtheria were reported from 24 great towns: Liverpool 5, Darlington, Manchester, Newcastle-on-Tyne, Sheffield, Wallasey, Warrington, and Birmingham each 2.

The number of stillbirths notified during the week was 233 (corresponding to a rate of 60 per 1000 total births), including 31 in London.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, Jan. 14th.
Pathology. 8.30 P.M. (Middlesex Hospital, W.). J. McIntosh: Some Centrifuge Experiments. P. Fildes, B. C. J. G. Knight, G. M. Richardson, and G. P. Gladstone: Metabolism of *Staphylococcus aureus*. L. E. H. Whitby and M. Hynes: Supravital Staining of Leukæmic Leucocytes. An Apparatus for Rapid Red Cell Measurement. R. W. Scarff and M. McGeorge: Blood Pressure in Experimental Renal Lesions. W. H. Mason: Pathogen-selective Cultures. L. C. Bousfield: Findings in Joint Fluids from Cases of Rheumatoid Arthritis. K. M. Eisenberg: Microscopy of Living Virus Material. A. C. Counsell and L. C. Martin: Pathological Specimens.
WEDNESDAY.
History of Medicine. 5 P.M. Mr. T. B. Layton: History of the Knowledge of the Anatomy of the Nose. Dr. T. Wilson Parry will read a paper by the late Dr. Dan McKenzie entitled Surgical Perforation in a Mediæval Skull with Reference to Neolithic Holing.
THURSDAY.
Dermatology. 5 P.M. (Cases at 4 P.M.) Cases: Dr. M. S. Thomson: 1–2. Cases for Diagnosis. 3. Angioma Serpiginosum. 4. Complete Leukonychia. Mr. H. Corsi: 5. Pigmented Hairy Mole developing in an Adult.
Neurology. 8.30 P.M. Prof. B. Brouwer (Amsterdam): The Spleen, the Liver, and the Brain.
FRIDAY.
Obstetrics and Gynæcology, Radiology. 8 P.M. Prof. D. Dougal and Dr. R. E. Roberts: Radiology in Relation to Obstetrics. Dr. L. N. Reece, Dr. H. C. H. Bull, Dr. W. G. Mackay, and Dr. Archibald Durward will also speak.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.
MONDAY, Jan. 13th.—8 P.M., Pathological Meeting.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Manson House, 26, Portland-place, W.
THURSDAY, Jan. 16th.—8.15 P.M., Col. C. A. Gill: Some Points in the Epidemiology of Malaria, arising out of the Malaria Epidemic in Ceylon.

PADDINGTON MEDICAL SOCIETY.
TUESDAY, Jan. 14th.—9 P.M. (Great Western Royal Hotel, W.), Mr. G. G. Turner: Income-tax in Medical Practice.

TUBERCULOSIS ASSOCIATION.
FRIDAY, Jan. 17th.—5.15 P.M. (Manson House, 26, Portland-place, W.). Dr. Noel Bardswell, Dr. J. G. Johnstone, and Miss M. C. Marx: After-care of the Tuberculous in London. 8.30 P.M., Dr. James Maxwell: Intestinal Tuberculosis.

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck-street, W.
THURSDAY, Jan. 16th.—7.45 P.M., Special General Meeting. 7.45 P.M., Dr. J. F. Brailsford: Radiological Demonstration of Developmental Abnormalities of the Skeleton.
FRIDAY.—11 A.M., Visit to the X Ray Department of St. Mary's Hospital. 5 P.M., Case Demonstration and Discussion. (Medical Meeting.)

NORTH LONDON MEDICAL AND CHIRURGICAL SOCIETY, Royal Northern Hospital, N.
WEDNESDAY, Jan. 15th.—9 P.M., Dr. Bellingham Smith: Continued Fever.

SOCIETY FOR THE STUDY OF INEBRIETY.
TUESDAY, Jan 14th.—4 P.M. (11, Chandos-street, W.), Dr. W. Norwood East and Dr. H. J. Norman: The Relations of Alcoholism and Crime to Manic-depressive Disorder.

BIOCHEMICAL SOCIETY.
FRIDAY, Jan. 17th.—3 P.M. (United Dairies Research Laboratories, Wood-lane, W.1), Short Communications.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.
FRIDAY, Jan. 17th.—5 P.M., Prof. A. F. MacCallan: The Surgery and Pathology of Trachomatous Conjunctivitis. (Hunterian Lecture.)

UNIVERSITY COLLEGE, LONDON.
THURSDAY, Jan. 16th.—5 P.M., Mr. F. G. Young, Ph.D.: Glycogen and the Metabolism of Carbohydrates. First of four lectures.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
WEDNESDAY, Jan. 15th.—2 P.M., Dr. R. S. Frew: Cough. 3 P.M. Dr. A. Signy: Prophylaxis of Whooping-cough and Measles.
Out-patient Clinics daily at 10 A.M. and ward visits (except on Wednesday) at 2 P.M.

LONDON SCHOOL OF DERMATOLOGY, 5, Lisle-street, W.C.
TUESDAY, Jan. 14th.—5 P.M., Dr. G. B. Dowling: Pityriasic Dermatitis.
WEDNESDAY.—5 P.M., Dr. I. Muende: Histopathology of Some Common Skin Diseases.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Jan. 13th, to SUNDAY, Jan. 19th.—ST. JOHN'S HOSPITAL, 5, Lisle-street, Leicester-square, W.C. Afternoon Course in Dermatology. (Open to non-members.)—NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W. All-day Course in Cardiology. (Open to non-members.)—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. Tues., 8.30 P.M., Mr. McNeill Love: Herniæ. Thurs., 8.30 P.M., Mr. A. Lawrence Abel: The Surgery of the Sympathetic Nervous System.—ROYAL CHEST HOSPITAL, City-road, E.C. Sat. and Sun., Course in Diseases of the Heart and Lungs. (Open to non-members.)—(Courses arranged by the Fellowship are open only to Members.)

LEEDS GENERAL INFIRMARY.
TUESDAY, Jan. 14th.—3.30 P.M., Dr. MacAdam: Some Cases of Minor Invalidism.

LEEDS PUBLIC DISPENSARY AND HOSPITAL.
WEDNESDAY, Jan. 15th.—4 P.M., Mr. L. N. Pyrah: Injection Therapy in the Treatment of Hæmorrhoids, Varicose Veins, and Hydrocele.

UNIVERSITY OF DURHAM.
SUNDAY, Jan. 19th.—10.30 A.M. (Newcastle General Hospital), Prof. T. Beattie: Medical Ward Visit.

GLASGOW POST-GRADUATE ASSOCIATION.
WEDNESDAY, Jan 15th.—4.15 P.M. (Royal Maternity and Women's Hospital), Prof. James Hendry: Hæmorrhage at the End of Pregnancy.

Appointments

ATLEE, C. N., M.D. Durh., M.R.C.P. Lond., D.P.H., D.P.M., has been appointed Divisional Medical Officer to the London County Council.
BALDWIN, E. J., M.B. Oxon., D.O.M.S., Hon. Ophthalmic Surgeon to the Essex County Hospital, Colchester.
LAURENT, L. P. E., M.D., M.R.C.P. Lond., Medical Registrar at the West London Hospital.
MITMAN, M., M.D., M.R.C.P. Lond., D.P.H., D.M.R.E., Medical Superintendent, Eastern Hospital.
PEET, E. W., M.B. Durh., F.R.C.S. Eng., Bernhard Baron Research Student at the Ferens Institute of Otology at the Middlesex Hospital Medical School.
SYKES, RUPERT, M.D., M.R.C.P. Lond., Resident Medical Officer at the Manchester Royal Infirmary.
TALBOT, G. G., M.B. N.Z., F.R.C.S. Eng., Second Ophthalmic Surgeon to the Royal Northern Hospital, N.7.
THOMPSON, H. R., M.B. Camb., F.R.C.S. Eng., Surgical First Assistant and Registrar at the London Hospital.
WALTON, W. S., M.D. Durh., B.Hy., D.P.H., Medical Officer of Health and School Medical Officer for West Bromwich.
WYATT, WALTER, M.B. Edin., L.D.S., D.P.M., Assistant School Medical Officer in Leeds.

Princess Alice Memorial Hospital, Eastbourne.—The following appointments are announced:—
HALL, E. WILSON, F.R.C.S. Edin., Hon. Surgeon;
SHERWOOD, G. D., M.B. Camb., Hon. Surgeon;
CROOK, A. H., M.Chir. Camb., F.R.C.S. Eng., Surgeon in Charge of Fracture Clinic;
ESTCOURT, H. G., M.B. Lond., F.R.C.S. Edin., Hon. Assistant Surgeon;
WILSON, T. H., M.B. Lond., F R.C.S. Eng., Hon. Assistant Surgeon.

MEDICAL NEWS

University of Cambridge

The Rockefeller Foundation have made an annual grant of not more than £1200 for five years for research in cellular physiology at the Molteno Institute under the direction of Prof. Keilin.

The title of the degree of M.B. has been conferred on Mrs. M. H. D. Gunther.

University of London

At recent examinations the following candidates were successful :—

M.D.

Branch I. (*Medicine*).—W. H. P. Cant, Univ. of Birm.; P. C. L. Carrier, Charing Cross Hosp.; Iris M. Cullum, Royal Free Hosp.; M. E. Disney, London Hosp.; T. J. Evans, Univ. Coll., Cardiff, and Middlesex Hosp.; S. T. Falla, London Hosp.; H. F. M. Finzel, Univ. of Brist.; Clifford James, Middlesex Hosp.; D. E. V. Jones, King's Coll. Hosp.; H. M. R. Jones, Middlesex Hosp.; Herbert Kirman, King's Coll. Hosp.; Beatrice Lewis, Univ. Coll. Hosp.; R. J. G. Morrison, St. Bart.'s Hosp.; Ivor Whittington, St. George's Hosp.; J. C. Winteler, King's Coll. Hosp.; and Tamsin M. Wynter, Royal Free Hosp.

Branch II. (*Pathology*).—Ronald Hare, St. Mary's Hosp.; W. A. E. Karunaratne, Univ. Coll. Hosp.; D. M. Pryce, St. Mary's Hosp.; and R. S. Wale, King's Coll. Hosp.

Branch III. (*Psychological Medicine*).—H. A. Cooper, King's Coll. Hosp.

Branch IV. (*Midwifery and Diseases of Women*).—R. K. Bowes, Univ. of Liverp. and St. Thomas's Hosp.; J. O. F. Davies, Middlesex Hosp.; Mary Evans, King's Coll. Hosp.; and Margaret M. White and Honor E. C. Wilkins, Royal Free Hosp.

Branch V. (*Hygiene*).—D. M. Connan, King's Coll. Hosp. and Westminster Hosp.; David Erskine, Guy's Hosp. and London School of Hygiene and Tropical Medicine; J. T. R. Lewis, Middlesex Hosp.; and F. J. G. Lishman, Univ. Coll. Hosp. and London School of Hygiene and Tropical Medicine.

University of Birmingham

At recent examinations the following candidates were successful :—

FINAL EXAMINATION FOR M.B., B.S.

E. M. Barker, Dorothy M. Braddock, N. R. Chan-Pong, A. W. F. Craig, F. J. Fowler, R. J. Ingham, E. E. K. Kilvert, B. A. Singer, Aileen M. Sutcliffe, and L. K. Thompson.

B.D.S.

C. G. Hails.

Royal College of Surgeons of England

The following lectures will be given at the college on Mondays, Wednesdays, and Fridays from Jan. 17th to Feb. 21st: Jan. 17th, Mr. A. F. MacCallan, the surgery and pathology of trachomatous conjunctivitis; Jan. 20th, Dr. E. W. Twining, a radiological study of the third ventricle; Jan. 22nd, Mr. Arthur Bulleid, the assessment of dental sepsis as a factor affecting medical and surgical procedures; Jan. 24th, Mr. John Gilmour, adolescent deformities of the acetabulum; Jan. 27th, Mr. E. P. Stibbe, the anatomy and surgery of the subtentorial angle; Jan. 29th, Mr. R. T. Payne, pyogenic infections of the parotid; Jan. 31st, Mr. G. A. Mason, extirpation of the lung; Feb. 3rd, Mr. A. M. Boyd, the investigation of peripheral vascular disease; Feb. 5th, Mr. H. Osmonde Clarke, injuries of the carpal bones; Feb. 7th, Mr. F. H. Bentley, wound healing in vitro and the interrelation of epithelial and fibrous tissue growth; Feb. 10th, Mr. G. C. Knight, intestinal strangulation; and Feb. 12th, Mr. G. F. Rowbotham, a series of tumours of the skull. On Feb. 17th, 19th, and 21st Dr. John Beattie will give three lectures on temperature regulation. All the lectures will take place at 5 P.M.

Order of St. John of Jerusalem

The following promotions in and appointments to the Venerable Order of the Hospital of St. John of Jerusalem have been sanctioned by the King :—

As Knight of Grace.—Lieut.-Colonel R. E. Wodehouse, O.B.E., M.D.

As Commander.—James Cairns, O.B.E., M.B., and Lieut.-General Sir James Andrew Hartigan, K.C.B., C.M.G., D.S.O., M.B.

As Officer.—Dr. N. M. Goodman, Major C. G. H. Morse, M.R.C.S.; Major R. F. Walker, M.C., M.B., R.A.M.C.; Dr. A. Tetreault, Lieut.-Colonel J. N. Gunn, D.S.O., M.D., M.R.C.S.; and Mrs. Constance E. M. Berridge, M.B.

Royal Society of Arts

On Wednesday, Jan. 15th, at 8 P.M., Mr. L. H. Lampitt, D.Sc., chairman of the food group of the Society of Chemical Industry, will speak on Food and the World.

Guild of Hospital Librarians

The first international meeting of this guild will be held in Paris from May 8th to 11th. The speakers will include Dr. René Sand, Madame Getting, Mademoiselle Oddon, Mr. C. E. A. Bedwell, Mrs. M. E. Roberts, and Mr. A. D. Power. The hon. secretary may be addressed at 48, Queen's-gardens, London, W. 2.

Hunterian Society

The Hunterian lecture of this society will be delivered at the Mansion House, London, E.C., at 9 P.M. on Monday, Jan. 20th, by Dr. Sven Ingvar, professor of medicine at the University of Lund, Sweden. He will speak on the physical basis of psychoneurosis.

The annual dinner of the society will be held on Thursday, Feb. 13th, at the May Fair Hotel.

Post-graduate Work in Newcastle

Under the auspices of the University of Durham classes will meet at the Babies' Hospital and Royal Victoria Infirmary, Newcastle, during the months of January, February, and March on Thursday afternoons. Till March 22nd there will be lecture demonstrations in medicine and surgery every Sunday at 10.30 A.M. Further particulars may be had from the Registrar, College of Medicine, Newcastle-upon-Tyne.

The late Dr. Haydn Brown

The death occurred on Jan. 3rd of Dr. Haydn Brown at his house in Bedford-square. He came prominently before the public as on two occasions the General Medical Council felt constrained to remove his name from the Medical Register for ethical reasons, which led to journalistic comment. He wrote profusely on many subjects which, generally speaking, fall within the province of the neurologist, but he was unable to convince his medical colleagues of the scientific soundness of his theories, in which he himself was, however, an implicit believer.

German Society for Internal Medicine

The Deutsche Gesellschaft für Innere Medizin is holding its forty-eighth meeting from March 23rd to 26th at Wiesbaden under the presidency of Prof. Schwenkenbecher of Marburg. A joint meeting will be held with the Reichsarbeitsgemeinschaft für eine neue deutsche Heilkunde when the internal treatment of thyrotoxicosis will be discussed. Other subjects for discussion will be the electrocardiographic diagnosis of myocarditis and diseases of the lung caused by inhalation of dust. The last two sessions will be devoted to joint meetings with the Deutsche Röntgengesellschaft when the subjects of discussion will be inflammatory diseases of the large intestine, the diagnosis of cavities, and the radiotherapy of malignant tumours of the internal organs. Dr. A. Géronne, of Wiesbaden, is the secretary of the congress.

The Medical Society of London

The second half of the 1935–36 session of this society will open on Jan. 13th with a pathological meeting. On Jan. 27th Mr. Zachary Cope will open a discussion on the treatment of acute appendicitis, and other discussions and their openers will be: Mr. C. S. Lane-Roberts on the treatment of sterility (Feb. 10th), Lord Horder on the ætiology and treatment of *B. coli* infections of the urinary tract (Feb. 24th), Mr. A. Dickson Wright on phlebitis and its treatment (March 9th), and Prof. G. Grey Turner on surgery of the œsophagus (March 23rd). The Lettsomian lectures will be given on Feb. 10th and 26th and March 2nd by Dr. Philip Manson-Bahr, who has chosen as his subject the differential diagnosis of diseases of the colon (dysentery and colitis) and their complications, with special reference to treatment. Sir James Walton will deliver the annual oration on May 11th, when he will speak on carcinoma of the stomach. The annual dinner of the society will be held at Claridge's on Thursday, Feb. 27th.

Pharmaceutical Society of Great Britain

On Tuesday, Jan. 14th, Mr. H. Berry will give a lecture on sterilisation technique. The meeting will be held at 8.30 P.M. at the house of the society, 17, Bloomsbury-square, London, W.C.

Tenth British Congress of Obstetrics and Gynæcology

This Congress will be held at Belfast from April 1st to 3rd under the presidency of Prof. R. J. Johnstone. One of the chief subjects of discussion will be the conservative treatment (operative or otherwise) of pathological conditions of the ovaries, tubes, and uterus, and there will be communications from several sources on radiotherapy of uterine diseases, on the use of sex hormones in gynæcology, and on sepsis and other complications of pregnancy and labour. The secretaries are Mr. C. H. G. Macafee and Dr. F. M. B. Allen, and the address of the former is 18, University-square, Belfast.

A Drowning Tragedy

Further details are to hand of the death of Dr. A. B. Aitken, which occurred on Dec. 8th at Lagos, as a result of a drowning accident. Dr. Aitken, who received his medical education at the University of Glasgow and the London Hospital, graduated as M.B., Ch.B. Glasg. in 1905 and took the diploma of F.R.C.S. Eng. in 1909. He served as house surgeon to the Royal Hospital for Sick Children, Glasgow, and at the outbreak of war, with the rank of temporary captain, was attached to the R.A.M.C. as a surgical specialist. Later he became consulting surgeon to the African hospital at Lagos and established a reputation throughout the whole district as a surgeon. He was out swimming with a party at Lagos when he got into difficulties. A brave attempt to rescue him was made by Sir Walter Johnson, director of medical and sanitary services in Nigeria, who himself was only saved by means of a rope of towels knotted together by other members of the party.

B.M.A. Scholarships and Grants in Aid of Research

The Council of the British Medical Association is prepared to receive applications for research scholarships and grants for the assistance of research in connexion with disease.

Scholarships.—An Ernest Hart Memorial Scholarship, value £200 per annum, a Walter Dixon Scholarship, value £200 per annum, and three Research Scholarships, each of the value of £150 per annum. These scholarships are given to candidates whom the Science Committee of the Association recommends as qualified to undertake research in any subject (including State medicine) relating to the causation, prevention, or treatment of disease. Each scholarship is tenable for one year, commencing on Oct. 1st, 1936. A scholar may be reappointed for not more than two additional terms and is not necessarily required to devote whole time to the work, but may hold a junior appointment at a university, medical school, or hospital, provided the duties of such appointment do not interfere with the work as a scholar.

Grants for the assistance of research into the causation, treatment, or prevention of disease will be made to applicants who propose as subjects of investigation problems directly related to practical medicine.

In making awards preference will be given to members of the medical profession, and applications must be made not later than May 9th on the prescribed form, a copy of which will be supplied on application to the medical secretary of the Association, B.M.A. House, Tavistock-square, London, W.C. 1. Applicants are required to furnish the names of three referees who are competent to speak as to their capacity for the research contemplated.

Vacancies

For further information refer to the advertisement columns

Aberdeen City District Mental Hospital.—Jun. Asst. M.O. £300.
Barry Surgical Hospital.—Res. Surg. O. £350.
Bedford County Hospital.—Second H.S. At rate of £150.
Birmingham City Mental Hospital.—Jun. Asst. M.O. £350.
Birmingham and Midland Eye Hospital.—Res. Surg. O. £200.
Birmingham, Selly Oak Hospital.—Jun. M.O.'s. Each at rate of £200.
Birmingham United Hospital.—Bacteriologist and Clin. Pathologist. £500.
Boling broke Hospital, Wandsworth Common, S.W.—H.P. At rate of £120.
Bootle General Hospital.—H.P., two H.S.'s. Also Cas. O. Each at rate of £150.
Brighton, Sussex Eye Hospital.—Hon. Asst. Surgeon.
Bristol Royal Infirmary.—H.P.'s, H.S.'s, &c. Each at rate of £80. Also Sen. Obstet. Surg. At rate of £100.
British Postgraduate Medical School, Ducane-road, W.—H.P.
Carshalton, Surrey, Queen Mary's Hospital for Children.—Asst. M.O. £250.
Charing Cross Hospital, W.C.—Hon. Anæsthetist.
Chelsea Hospital for Women, Arthur-street, S.W.—Pathologist. £40.
Colchester, Essex County Hospital.—Asst. H.S. £120.
Colindale Hospital, Colindale, N.W.—Asst. M.O. £350.
County Hall, Westminster Bridge, S.E.—Asst. M.O. £600. Also Asst. M.O.'s for School Medical Work. 30s. a session.
Coventry and Warwickshire Hospital.—H.S. to Aural and Ophth. Depts. At rate of £125.
Croydon, Mayday Hospital.—Jun. Res. Asst. M.O. £300.
Doncaster Royal Infirmary.—H.S. £175.
Dorset County Council.—Asst. County M.O. £500.
Eastern Fever Hospital, Homerton-grove, E.—Asst. M.O. £250.
East Riding Mental Hospital, Beverley.—Jun. Asst. M.O. £250.
Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Clin. Asst. to Ear, Nose, and Throat Dept. Also Asst. Radiologist. £100.
Evelina Hospital for Sick Children, Southwark, S.E.—Dental Surgeon. 50 guineas.
Glasgow Victoria Infirmary.—Asst. Radiologist. Also two additional Visiting Anæsthetists. Each £400.
Grimsby and District Hospital.—Sen. H.S. £200. Also Jun. H.S. and H.P. Each £150.
Halifax General Hospital.—Jun. Res. M.O. £250.
Hampstead General and N.W. London Hospital, Haverstock Hill, N.W.—H.P. At rate of £100.
Hertford County Hospital.—H.P. At rate of £150.
Huddersfield County Borough.—Asst. School M.O. £500.
Ipswich, East Suffolk and Ipswich Hospital.—H.P. £144.
Isleworth, West Middlesex County Hospital.—Res. Anæsthetist. £400. Also Cas. M.O. £350.
Kettering and District General Hospital.—Second Res. M.O. At rate of £125.
Leeds General Infirmary.—Res. Aural Officer. £149.
Liverpool and District Hospital for Diseases of Heart.—H.P. At rate of £100.
Liverpool, Royal Children's Hospital.—Med. Reg. and Tutor. £50.
Liverpool, Stanley Hospital.—H.S., H.P., and Gynæcological H.S. Each at rate of £100.
L.C.C. Group Laboratory, Archway Hospital, Archway-road, N.—Asst. Pathologist. £650.
London County Council.—Asst. M.O.'s for Mental Hospital. Each £470.
London Homœopathic Hospital, Great Ormond-street, W.C.—Asst. Physician for Diseases of Women.
London Hospital, E.—Asst. in X Ray Dept. £100. Also Hon. Asst. Surgeon.
London School of Clinical Medicine, Dreadnought Hospital, Greenwich, S.E.—Jun. Pathologist. £400.
Manchester, Ancoats Hospital.—Two H.S.'s. Each at rate of £100. Also Med. Reg. £50.
Manchester Victoria Memorial Jewish Hospital, Cheetham.—Res. H.S. £150.
Marie Curie Hospital, 2, Fitzjohns-avenue, N.W.—Res. M.O. At rate of £100.
Metropolitan Hospital, Kingsland-road, E.—Res. Cas. O. £100.
National Dental Hospital.—Hon. Asst. Anæsthetist.
Newcastle-upon-Tyne, Barrasford Sanatorium.—Res. Med. Asst. £250.
Newcastle-upon-Tyne, City Hospital for Infectious Diseases.—Res. Med. Asst. £350.
Newcastle-upon-Tyne, Hospital for Sick Children.—Res. Surg. O. £250. Also H.P. and H.S. Each at rate of £100.
Nottingham General Hospital.—H.S. At rate of £150.
Oswestry, Robert Jones and Agnes Hunt Orthopædic Hospital.—H.S. At rate of £200.
Pinewood Sanatorium, Wokingham, Berks.—Asst. M.O. £250.
Plymouth, Mount Gold Orthopædic and Tuberculosis Hospital.—Asst. Res. M.O. £350.
Preston, Biddulph Grange Orthopædic Hospital.—Sen. H.S. At rate of £250.
Putney Hospital, Lower Common, S.W.—Jun. M.O. At rate of £100.
Queen's Hospital for Children, Hackney-road, E.—Three Anæsthetists. One guinea per attendance.
Reading, Royal Berkshire Hospital.—Cas. O. At rate of £125.
Royal Eye Hospital, St. George's-circus, Southwark, S.E.—Hon. Asst. Surgeon.
Royal Masonic Hospital, Ravenscourt Park, W.—Surgeon.
St. Bartholomew's Hospital, E.C.—Asst. Physician. Also Asst. Physician and Asst. Director to Medical Professorial Clinic.
St. Mary's Hospital, W.—Cas. H.S. At rate of £100.
Salford Royal Hospital.—Orthopædic Reg. £100.
Smethwick, St. Chad's Hospital.—Res. Obstet. Officer. £350 Also Jun. Res. M.O. At rate of £150.
Southampton, Borough General Hospital.—Jun. Res. M.O. £200.
South London Hospital for Women, Clapham Common, S.W.—Out-patient M.O. £100.
Stockport Infirmary.—Res. Surg. O. £250.
Stoke-on-Trent, Longton Hospital.—H.S. £160.
Swindon and North Wilts Victoria Hospital.—Second Res. M.O. £125.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Cas. O. At rate of £200. Also H.P. and H.S. Each at rate of £100.
West End Hospital for Nervous Diseases, Gloucester-gate, N.W.—Res. H.P. £125.
Westminster Hospital, Broad Sanctuary, S.W.—Asst. Obstet. Surgeon.
Worcester Royal Infirmary.—Jun. H.S. £120.
Worksop, Victoria Hospital.—Sen. and Jun. Resident. At rate of £150 and £120 respectively.

NOTES, COMMENTS, AND ABSTRACTS

SCHOOL PRESSURE IN WORK AND PLAY

THAT the stress of modern education and examinations in schools is shown by a loss of weight during term, the weight being made up in holidays, was the contention of Dr. G. O. Barber, M.O., of Felsted, who opened a discussion at a meeting of the Society of Medical Officers of Schools, held at University College on Jan. 3rd. The fact that this rhythm occurred in day- as well as in boarding-schools showed that it was not due to school food. It was, moreover, general experience that a boy admitted to the sanatorium with some minor physical injury slept solidly, waking only for food, for the first 24 hours. Similarly children slept a lot at the beginning of the holidays before they came to take an interest in hobbies or games. The three ways of dealing with the problem were: (1) distribution of the strain by reducing work periods and providing a midday pause of half an hour when the child could do exactly what it liked; (2) free time—rightly used (at Felsted the hobbies and clubs were housed in a big country house, with a warden to help boys out of difficulties, where each could follow his bent); (3) morning and evening chapel which provided ten minutes of detachment at each end of the day.—Dr. Alice Sanderson Clow (Cheltenham), who followed, held that children needed protection against their own energies rather than stimulation. Great responsibility rested on the parent and head of a boarding-house in detecting the early signs of fatigue. By the time the doctor was consulted the symptoms were anxiety, diminished concentration, stooping, loss of appetite, and broken sleep, and the only remedy was prolonged absence from school. A brain once impaired by prolonged fatigue rarely, if ever, recovered completely. The greatest feature in modern strain seemed to be the external examination taken too young. The morning session should be from 9 to 12.40, with 5-minute intervals of complete relaxation between the 40-minute lessons and a 30-minute break in the middle of the morning. Children found essay writing a great strain, and the homework set was usually too long for all but the brightest. Some homework was good in that it could be done in the evening, allowing the child to get out in the afternoon sun. A tired child sought rest rather than play, and might be overdone by organised games, especially with the element of competition. A little girl of 12 who had recently gone to her first boarding-school had said, "Oh, everything is lovely—but there's no time to play." "But don't you have games?" "Oh, yes, we have lots of games and they're glorious. But they're not *play*." Dr. Clow contrasted the white limbs of school-children on the beach early in the holidays with the bronze of their parents and baby brothers; school-children were often kept in high collars, in order to display the school tie, and in gloves and long black stockings which were unhygienic from every point of view.—Mr. A. J. R. Roberts (head of Mill Hill junior school) had known in many years' experience only one breakdown, which had taken place during holiday time. The régime of his school included most of the desiderata mentioned. Boys who spent themselves in nervous energy must be given a day in bed now and then.—Mr. Lee-Browne (head master of Rendcomb College) also outlined his time-table; teaching periods had been reduced to 28 and preparation to 7½ hours for boys up to 15 and 10½ hours over that age. These hours included music, drawing, and manual work; and there had been no falling off in scholastic success as a result. His boys got about 20 hours of spare time a week, with 8 on Sunday, on which day 1 hour must be spent in compulsory quiet. Value had been obtained from a brief exercise before breakfast followed by a cold bath. Recently they had instituted, with great success, one completely free afternoon a week when boys could do exactly what they liked—work or play. There was a very real problem of holiday pressure—the pressure of the car the cinema, or even the organised camp. The time for character training had been squeezed almost out by new subjects in the curriculum. If the number of teaching hours could not be reduced the period of school life would have to be lengthened.—Dr. Jessie White thought strain would be greatly lessened if children were allowed to move about freely while being taught, instead of being obliged to sit for long periods in cramped positions.

THE SELECTION OF AN ANÆSTHETIC

"Who pays the piper . . ."

BUT the patient would generally be very ill served if he were allowed to call the tune. The wise doctor will not categorically refuse his right to call it, but while appearing to concede the request he will do what he knows to be best for his patient. A few days ago a hospital visitor handed on to the executive committee a complaint by patients who had been given a local anæsthetic as a preparation for a major operation. Some persons, she said, had come to hospital expecting to have a general anæsthetic and had been shocked to find themselves conscious on the operating table. It may safely be assumed that the local anæsthetic was preferred for some good reason. There are occasions when, in some form or another, it is so much the safer method to adopt that the surgeon has no choice in the matter. There are others when the advantage is less decisive and when the patient may reasonably be given his choice. Perhaps when the inquiry suggested at the Manchester Medical Society (see p. 89) has been made there may be less room for such choice. But to put the pros and cons before the patient would generally be to ask him to answer a question the full bearings of which he cannot possibly realise. When as a result of previous experiences of his own he holds definite views as to the anæsthetic which suits him the anæsthetist will weigh these before he makes up his own mind. What anæsthetist has not met the patient who "cannot take ether; they tried to give it to me but it's no good"? And what anæsthetist has not in those circumstances started the administration with something else and then gone on to give ether without a hitch? The same thing is true of almost any anæsthetic. But every anæsthetist knows the importance of a quiet mind in the subject for operation; it is half the battle that the patient should believe from the start that what is being done is suitable to him and in accordance with his desire—if he has expressed one.

THE KEEP FIT ADVENTURE IN SUNDERLAND

THE development of the Keep Fit movement in Sunderland ought to dispel any doubts whether youths and men and girls and women of this country are ready to respond to opportunities of organised physical training when they are offered by an organiser of inspiring zeal. Chapter II. of the report of the C.M.O. of the Board of Education, to which reference has already been made, relates the history of the movement. To the very first class, held in the winter of 1929, there came 127 girls, and on the evening of May 8th, 1935, no fewer than 1450 women and girls took the field in a mass demonstration. A ten-fold increase in six years clearly proves the case for such an "adventure." Throughout the 25 weeks of that first winter season, two classes were held, one for girls under 16 years of age and one for older women. The organiser took both these classes herself, but as the numbers increased it was found necessary to appeal for voluntary leaders to take extra classes. In response to this appeal, 17 elementary school teachers and three trained gymnasts came forward to offer their help.

From 1930 onwards demonstrations have been given in various parts of the counties of Northumberland and Durham, and it has been found that this is

one of the most effective means of spreading the work and of arousing enthusiasm. Through the coöperation of the chief education officer and of headmasters and mistresses of schools with good halls, arrangements were made whereby halls became available to the movement at the cost of paying each caretaker the fee of 1s. per class. In 1930 there were nine classes running in different parts of the town, with an average attendance of 500 a week, but by the end of 1934 there were 18 classes, with an average attendance of 1000. At the beginning all classes were for anybody and everybody, but soon there sprang into being one special class for mothers only, provided with a nursery, and two classes for women over 40. The leaders are now sufficiently trained to give courses of lessons.

As far back as 1931 Sunderland leaders of classes were taking classes outside the Sunderland area. Then organisers in Northumberland and in Newcastle began to train leaders, and so the work spread to various districts, each district supporting itself. Sunderland is very proud of its "keep fit" adventure, and the officers of the local education authority have had the reward of seeing those for whom they have worked reaping the full benefit of their efforts. The movement is spreading to Huddersfield, Halifax, and other northern towns.

THE "REALITY" OF PAIN AND DISEASE

Mr. CHARLES W. J. TENNANT, district manager of the Christian Science Committees on Publication for Great Britain and Ireland, writes: In his lecture on Medicine and Faith published in your issue of Dec. 28th, 1935, Dr. Louis Leipoldt, quoting from the fifth chapter of the Epistle of St. James, infers that pain and disease must be regarded as realities, "and not, as the Christian Scientists would have us believe, as mere figments in a perfect world." To a Christian Scientist "reality" means that which is "spiritual, harmonious, immutable, immortal, divine, eternal" ("Science and Health with Key to the Scriptures," by Mary Baker Eddy, p. 335). If disease were a reality in the above sense, it could never be cured. God is the creator of all that is real, eternal, immutable, and immortal. Therefore sin, disease, and death, which do not proceed from God, are unreal, and can only be the erroneous conceptions of a false material sense. Christian Scientists, in the measure of their spiritual understanding, are daily proving the unreality of evil by healing the sick and reforming the sinner through spiritual means alone in fulfilment of our Master's command.

NEW PREPARATIONS

"KALDROX" ABSORBENT COMPOUND is described as a palatable emulsoid of colloidal kaolin and aluminium hydroxide gel, the formula being kaolin 20, aluminium hydroxide 2·5, aromatics 0·008, aqua destill. to 100. It is used to remove excess acid from the stomach by adsorption and provide a protective covering for irritated mucous membrane, thus relieving the pain or discomfort often associated with peptic ulceration; it is also recommended for diarrhœa and conditions designated "colitis" or "unstable bowel." The makers are Petrolagar Laboratories Ltd., Braydon-road, London, N.16.

BELLERGAL.—Each tablet contains 0·001 g. of Bellafoline (lævorotatory alkaloids of belladonna), 0·0003 g. of Femergin (ergotamine tartrate), and 0·02 g. of phenobarbital. It is designed to overcome excessive autonomic nervous tone; the belladonna restrains over-activity of the sympathetic, while the ergotamine inhibits the parasympathetic—the two forms of hypertonus being often associated though one of them may predominate. Experiments are held to show that the individual actions of belladonna and ergotamine are not impaired by mixing them in Bellergal and that the central sedative action of phenobarbital is increased. The remedy is prepared by Sandoz Products (134, Wigmore-street, London, W. 1), and is recommended especially for the prevention of migraine and asthma, and the treatment of Graves's disease, urticaria, pruritus, night-sweats, and functional nervous disorders. The dose proposed is 3–4 tablets daily, or sometimes more.

"TABLOID" BLAUD PILL AND COPPER.—It has been suggested that the therapeutic action of iron is enhanced by the addition of minute quantities of copper. Quoting work by M. S. Rose (1932), Prof. L. J. Witts stated in our last issue that "in experimental animals iron can be absorbed and stored in the liver but cannot be converted into hæmoglobin unless copper is also present." How far a physiological deficiency of copper can occur in the human beings is open to question, but the use of this metal in conjunction with iron may perhaps be effective in some cases where iron alone has failed. For the convenience of those physicians who favour its administration Messrs. Burroughs Wellcome and Co. (Snow-hill Buildings, London, E.C. 1) are now issuing Blaud Pill (pil. ferri carb. B.P.) and Copper in the form of Tabloids. Each contains 10 grains of the pill and 1/100 grain of copper sulphate.

APONDON "DIWAG" is a preparation of thyroid recommended for use in obesity. The objection to using thyroid by itself is that it gives rise to symptoms such as tachycardia and restlessness, and in Apondon this obstacle is overcome, it is claimed, by the addition of a sympathetic depressant, Ergocholin "Diwag," made by the same firm, Dr. Joachim Wiernik A.-G., Berlin-Waidmannslust. Each pill includes 5·25 mg. of the Ergocholin and 114 mg. of standardised thyroid gland (= 0·5 mg. iodine) and the suggested dose is 1–2 pills daily at first and 2–4 later. The preparation is distributed in this country by Messrs. Coates and Cooper Ltd. (94, Clerkenwell-road, London, E.C. 1).

WE have received from the MARMITE Food Extract Company a booklet which sets out clearly under three main headings evidence of the potency of the product in the vitamin-B complex, of its efficacy in the treatment of certain anæmias, and of its value in tropical medicine. Some 70 recent references to medical literature are quoted in support of the claims made, and a dosage table and details as to administration are appended.

Births, Marriages, and Deaths

BIRTHS

ANDERSON.—On Jan. 3rd, to Margaret (née Hutton), wife of Dr. E. W. Anderson, a son.

BULL.—On Jan. 1st, at Devonshire-place, the wife of Dr. Cecil Bull, of a daughter.

DICKS.—On Jan. 6th, at Blackheath, the wife of Henry V. Dicks, M.D. Camb., of a son.

MACLAY.—On Jan. 4th, at Kensington-square, W., the wife of the Hon. W. S. Maclay, M.D. Camb., of a daughter.

MARRIAGES

OWEN—CHIOZZA MONEY.—On Dec. 31st, 1935, at Caxton Hall, Thomas Owens, M.R.C.S. Eng. (Camb. and St. Bart.'s), to Gwendolen Doris, only child of Sir Leo and Lady Chiozza Money, of Bramley, Surrey.

REWCASTLE-WOODS—LESTER.—On Nov. 30th, 1935, at Hongkong, Dr. T. G. Rewcastle-Woods to Bertha Iris Lester. (Address, Methodist Mission, Hankow, Hupeh, China.)

DEATHS

BROWN.—On Jan. 3rd, at Bedford-square, W.C., Haydn Brown, L.R.C.S. Edin.

COULDREY.—On Jan. 5th, at Scunthorpe, Lincs, Thomas Reginald Coul'drey, M.R.C.S. Eng.

GIBSON.—On Dec. 27th, 1935, at Paradis, Grange, Guernsey, Edmund Valentine Gibson, M.D.

GRAY.—On Jan. 4th, at Glasgow, Albert Alexander Gray, M.D. Glasg.

MORRIS.—On Dec. 31st, 1935, at Caerleon, Monmouthshire, Lieut.-Col. William Albert Morris, L.R.C.P. Edin., R.A.M.C. (retd.), in his 79th year.

ORLEBAR.—On Jan. 2nd, at Hove, of acute pneumonia, Jeffery Alexander Amherst Orlebar, M.B. Camb.

READ.—On Jan. 2nd, Mabyn Read, M.D. Camb., D.P.H., Medical Officer of Health for Worcester, 1891 to 1929, aged 81.

WHITE.—On Jan. 5th, at St. Bartholomew's Hospital, Rochester, Clement John Goodhugh White, M.B. Camb., aged 27 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.